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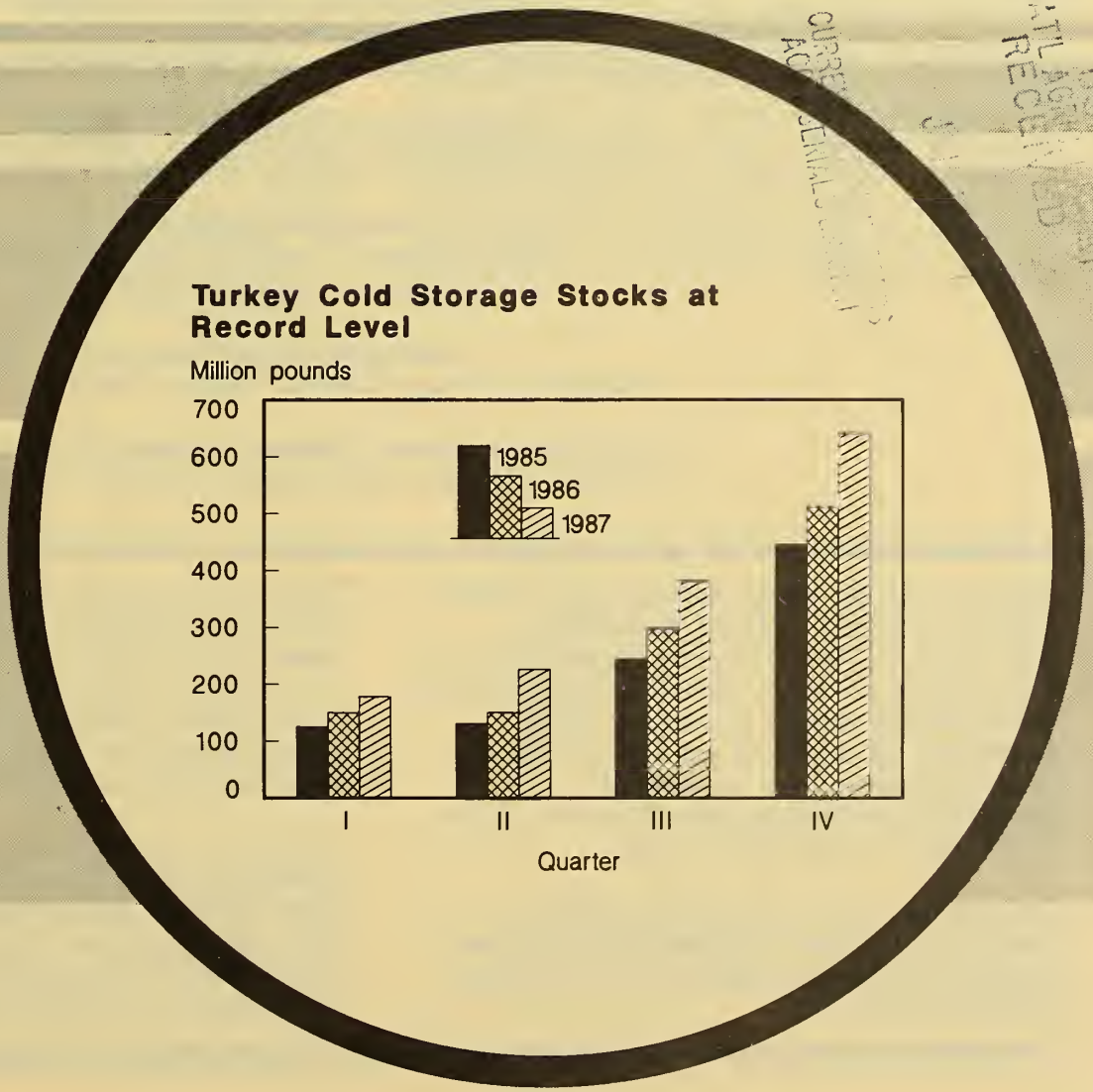

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Total red meat and poultry production is expected to continue at a record level in 1988. Record production of broilers and turkeys and increased pork output will more than offset lower beef production.

Turkey production for 1987 will be about 18 percent larger than a year earlier, and cold storage stocks are at record levels. Turkey prices have weakened under the burden of these large supplies, and are declining counterseasonally before Thanksgiving. The Eastern Region wholesale price for 8–16 pound hens this fall may average 48–52 cents per pound, down from 78 a year ago. Carryover stocks into 1988 are likely to remain high, and with continued large production increases in early 1988, prices will remain under pressure. Lower turkey prices have squeezed producer returns, and this is expected to result in slower expansion next year.

Broiler producers have had 3 years of positive returns, and this has resulted in substantial gains in output. Broiler production is expected to increase again in 1988, but the increase is expected to be less than this year's 8–percent gain. The 12–city wholesale broiler price for 1987 will average 9–10 cents per pound below the year–earlier level. With continued gains in production in 1988, further price declines are likely.

Pork producers are responding to the past year of positive net returns by increasing output. Production is showing sizable year–over–year gains this fall, and it may increase about 11 percent in 1988. The larger pork supplies, combined with record large poultry production, likely will result in 1988's 7–market barrow and gilt price averaging $10–$16 per cwt below this year's average of $52–$53.

Beef production in 1988 is expected to decline about 4 percent, about the same as this year's decrease. The decline is due to reduced nonfed slaughter, as fed cattle marketings are likely to remain above year–earlier levels through at least mid–1988. Choice steer prices in 1988 may average near to slightly above this year's $64–$65.

Retail beef prices in 1988 are expected to average moderately above this year's level, but the annual average likely will be below the peak prices reached this summer. Even though beef supplies will be down, large supplies of competing meats at lower relative prices will hold down gains in beef prices. Pork prices are expected to decline 8–12 percent after having risen 4–6 percent in 1987. Retail poultry prices are expected to decline again in 1988.

*Table 1—Livestock, poultry, and egg production and prices
(All percent changes shown are from a year earlier.)

Item	1985	1986	1987				1988				
	Annual	Annual	I	II	III	IV 1/	Annual 1/	I 1/	II 1/	III 1/	Annual 1/
					Million pounds						
PRODUCTION											
Beef	23,557	24,213	5,755	5,737	6,063	5,775	23,330	5,625	5,600	5,725	22,350
% change	+1	+3	0	-8	-3	-3	-4	-2	-2	-6	-4
Pork	14,728	13,998	3,540	3,325	3,384	3,900	14,149	3,850	3,825	3,825	15,650
% change	0	-5	-1	-7	+5	+8	+1	+9	+15	+13	+11
Lamb & mutton	352	331	76	75	77	80	308	85	80	80	330
% change	-5	-6	-16	-4	-5	-2	-7	+12	+7	+4	+7
Veal	499	509	114	101	100	110	425	100	90	100	400
% change	+4	+2	-12	-22	-22	-10	-17	-12	-11	0	-6
Total red meat	39,136	39,051	9,485	9,238	9,624	9,865	38,212	9,660	9,595	9,730	38,730
% change	0	0	-1	-8	-1	+1	-2	+2	+4	+1	+1
Broilers 2/	13,569	14,266	3,732	3,910	3,970	3,850	15,462	3,950	4,175	4,150	16,225
% change	+4	+5	+9	+6	+10	+8	+8	+6	+7	+5	+5
Turkeys 2/	2,800	3,133	668	867	1,160	1,050	3,685	775	975	1,100	3,900
% change	+9	+12	+20	+21	+16	+14	+18	+16	+12	+0	+6
Total poultry 3/	16,871	17,929	4,533	4,932	5,200	5,030	19,695	4,865	5,300	5,385	20,675
% change	+5	+6	+10	+9	+11	+9	+10	+7	+7	+4	+5
Total red meat & poultry	56,007	56,980	14,018	14,170	14,824	14,895	57,907	14,525	14,895	15,115	59,405
% change	+2	+2	+3	-3	+3	+4	+2	+4	+5	+2	+3
					Million dozen						
Eggs	5,688	5,715	1,443	1,438	1,439	1,480	5,799	1,440	1,440	1,415	5,760
% change	0	0	+1	+1	+2	+2	+1	0	0	-2	-1
PRICES											
					Dollars per cwt						
Choice steers, Omaha, 900-1100 lb	58.37	57.75	60.46	68.60	65.04	63-65	64-65	61-67	64-70	62-68	62-68
Barrows & gilts, 7 mkts	44.77	51.19	48.11	56.18	59.37	44-48	52-53	41-47	37-43	37-43	37-43
Slaugh. lambs, Ch., San Ang.	68.61	69.46	78.05	90.82	72.90	69-73	78-79	74-80	75-81	67-73	70-76
					Cents per pound						
Broilers, 12-city avg. 4/	50.8	56.9	50.0	48.7	48.7	42-46	47-48	40-46	41-47	41-47	40-46
Turkeys, NY 5/	75.5	72.2	58.0	56.3	56.3	48-52	54-55	47-53	47-51	54-60	51-57
					Cents per dozen						
Eggs New York 6/	66.5	71.1	64.8	58.9	63.9	62-66	62-63	60-66	57-63	60-66	60-66

1/ Forecast. 2/ Federally inspected. 3/ Includes broilers, turkeys, and mature chickens. 4/ Wholesale weighted average. 5/ Wholesale, 8- to 16-pound young hens. 6/ Cartoned, consumer Grade A large, sales to volume buyers.

FACTORS AFFECTING LIVESTOCK AND POULTRY

Record high production of red meat and poultry characterizes the environment for producers. Pork and poultry increases have more than compensated for lower beef production. Although modest growth in GNP is likely to continue, uncertainties over the strength of the U.S. economy will affect the livestock and poultry sectors.

Production costs, particularly for feed, are likely to increase slightly during 1988. Feed costs in 1986/87 are still well below the 1985/86 level. However, the declines in feed grain and soybean meal prices appear to be over. Expected increases in feed grain and meal prices, although relatively small, will increase total production costs for the remainder of 1987 and during 1988.

Modest Economic Growth Likely to Continue

Growth in real Gross National Product for 1987 will likely be around 3 percent, with real disposable income increasing about 2percent. The healthy growth in the Index of Leading Indicators, up over 7 percent from last year, suggests continued expansion in 1988. However, recent sharp drops in the stock market have increased uncertainty about the strength of the 1988 expansion. Heightened uncertainty suggests that producers should place a wider probability range around economic variables which affect the livestock and poultry industries.

The bank prime rate, which is averaging about 8.5 percent for 1987, is expected to be in the 8.5–9.5 percent range for 1988, with the lower end of the range more likely if real growth is substantially less than 1987. Inflation is expected to be about 3.5 percent in 1988, about the same as 1987. Real disposable income is expected to grow more slowly than real GNP in 1988, providing only slight additional support for meat demand.

As of October 1, indicated feed grain acreage for harvest in 1987 was 87 million acres, down 15 percent from a year ago. Yield estimates are about the same as for 1986, resulting in a 14–percent decline in total feed grain production. Corn production may total 7.14 billion bushels this year, down 14 and 20 percent from 1986/87 and 1985/86, respectively. Final crop production will reflect late–season weather developments. The harvest is expected to be about 5 percent smaller than projected total 1987/88 use, resulting in stocks declining 7 percent from the large 1986/87 ending stocks, but still 13 percent above 1985/86. Farm prices for corn in 1986/87 likely averaged $1.50 a bushel, but may average $1.60 to $1.90 in 1987/88, still well below the $2.23 average in 1985/86.

U.S. soybean acreage harvested this fall is expected to be 57.6 million acres, down 1 percent from a year ago. Production is estimated at 1.97 billion bushels, up about 1 percent from a year ago. Soybean meal prices in 1987/88 are estimated to be $150–175 per ton, comparable to the 1986/87 average of $162.50 per ton and higher than the $154.90 average in 1985/86.

POULTRY AND EGGS

The broiler and turkey industries are expanding more rapidly during 1987 than during 1986 in response to favorable net returns during 1986. The record levels of production and per capita consumption are pressuring prices and profits. The expansion is expected to continue into 1988, but at a slower rate as net returns narrow for broilers and losses widen for turkeys. The egg industry also expanded output during 1987 in response to profits in 1986. Expected per capita supplies of eggs will be near 1986 levels. Production will likely decrease slightly during 1988 in response to narrowing net returns and consumer preferences for fewer eggs.

Total U.S. poultry meat exports of 545 million pounds through August were running 39 percent ahead of 1986 in volume and 41 percent in total value. Exports were valued at $264 million, resulting in an average export unit value of $1065 per metric ton or 48 cents per pound. Lower U.S. prices, a cheaper dollar, and the Export Enhancement Program all contributed to the increase.

Sharp competition from the European Community (EC), especially France, is an important force in the world poultry market. World production of poultry meat is estimated to be up about 6 percent in 1987. Several countries, in addition to the United States, made good gains in output. These countries included several other major exporters such as Brazil, Hungary, the Netherlands, and Thailand.

While U.S. egg production is estimated up nearly 1.5 percent in 1987, contrasted with about a 0.5 percent increase last year, world production (not including China) is estimated up only 1.2 percent this year, compared with a nearly 1.7–percent increase in 1986. In the EC, production declined again, about 1 percent this year, but they still managed to increase exports. The USSR, another major egg producer, increased output about 3 percent this year and its imports of eggs are estimated down slightly. But world imports of eggs were up in 1987 due mainly to more imports by Asian countries.

Turkeys

Turkey production in 1987 will likely be 18 percent above 1986. The National Agricultural Statistics Service reported that 16 percent more birds were to be raised during 1987, and poults placed between September 1986 and August 1987 were 17 percent more than the comparable period last year. Turkey slaughter weights have been slightly higher during 1987 than in 1986, which may increase production slightly more than the increase in birds grown. The sharp increase in production resulted primarily from large positive net returns realized during 1986. Production in 1988 is expected to increase 6-7 percent in 1988, as producers adjust to below–breakeven net returns in the last half of 1987 and the first half of 1988.

Table 2—Turkey hatchery operations, 1985-88 1/

Month	Total turkey placed 2/			Eggs in incubators first of month, changes from previous year		
	1985-86	1986-87	1987-88	1985-86	1986-87	1987-88
	- - Thousands - -			- - - Percent - - -		
Sept.	10,661	13,620	15,078	+20	+18	+20
Oct.	12,451	14,135		+8	+17	+18
Nov.	12,648	13,836		+13	+11	
Dec.	14,448	17,705		+17	+18	
Jan.	17,204	21,118		+8	+26	
Feb.	18,608	22,630		+13	+15	
Mar.	20,761	25,172		+8	+18	
Apr.	23,065	26,093		+10	+15	
May	24,337	26,552		+9	+14	
June	23,394	27,023		+10	+14	
July	22,310	26,000		+13	+18	
Aug.	16,405	19,992		+8	+22	

1/ Breakdown by breed not shown to avoid disclosing individual operations. 2/ Excludes exported poults.

Table 3--Turkeys: Number raised, 1983-87 1/

States	Total all breeds				
	1983	1984	1985	1986	1987
	1,000 head				
Ark.	12,850	14,366	16,000	16,500	18,000
Calif.	20,200	19,730	20,500	21,900	24,900
Colo.	4,435	2/	2/	2/	2/
Conn.	31	31	35	40	40
Del.	294	64	11	3/	3/
Ga.	2,266	2,582	2,631	2,426	2,389
Ill.	208	290	213	347	468
Ind.	6,710	6,310	6,941	9,370	13,000
Iowa	6,710	5,800	6,300	7,000	8,700
Kans.	115	100	275	104	216
Md.	100	100	129	3/ 125	3/ 133
Mass.	160	152	156	145	135
Mich.	1,900	2,100	2,300	2,700	3,000
Minn.	27,000	28,500	30,400	34,200	40,700
Mo.	13,000	12,000	12,500	13,500	15,400
Nebr.	814	639	850	1,437	1,871
N. H.	26	27	28	26	26
N. J.	85	88	88	100	100
N. Y.	332	329	314	343	442
N. C.	29,350	30,400	31,850	39,100	48,150
N. Dak.	760	820	900	1,000	1,200
Ohio	2,400	2,800	2,800	3,100	3,400
Okla.	1,600	2/	2/	2/	2/
Oreg.	810	900	1,300	1,540	1,830
Pa.	6,800	6,100	7,100	7,800	7,700
S. C.	2,159	2,194	2,194	3,900	4,050
S. Dak.	1,528	1,522	1,723	1,968	2,450
Tex.	5,400	2/	2/	2/	2/
Utah	2,328	2,387	3,082	3,390	3,731
Va.	11,388	10,795	13,066	14,307	16,426
W. Va.	1,849	2,300	2,400	2,220	2,400
Wis.	7,115	6,120	6,150	6,128	5,900
Oth.		11,700	12,400	12,500	13,620
U.S.	170,723	171,246	185,292	207,216	240,377

1/ 1986 revised. 1987 preliminary based on turkeys placed September 1, 1986 through August 31, 1987. Excludes young turkeys lost. 2/ Colo., Okla., and Tex. combined to avoid disclosing individual operations. 3/ Maryland and Delaware combined.

Turkey slaughter during January–September was approximately 19 percent ahead of the same period last year. Slaughter during the third quarter was 17 percent greater than last year. Poults placed for fourth–quarter slaughter indicate that production in that quarter will be up 14 percent from 1986. Poults placed in September were 11 percent above last year, and eggs in incubators on October 1 were up 18 percent. These indicators support estimates for 14–16 percent heavier production during first–quarter 1988 over the same period in 1987.

Table 4--Federally inspected turkey slaughter, 1986-87

Year	Number	Average weight	Live-weight pounds	Certified RTC
	Million	Pounds	Million	Pounds
1986				
I	34.2	20.41	697.5	556.1
II	45.4	19.81	898.7	717.4
III	60.5	19.66	1,189.5	938.4
IV	56.8	20.44	1,161.4	921.1
Year	196.9	20.08	3,947.0	3,133.0
1987				
I	40.9	20.67	844.4	668.3
II	55.5	19.70	1,093.2	866.8
III	69.9	19.88	1,389.4	1,099.0

Net returns for turkeys during the first half of 1987 were approximately 1–2 cents per pound, down from nearly 7 cents in the first half of 1986. Net returns in the third quarter of 1987 were below breakeven. Fourth–quarter prices are expected to be substantially below breakeven, bringing net returns for the year a few cents below breakeven. This is the first year since 1983 that turkey producers have had losses. This is also down considerably from the 1986 average net return of nearly 14 cents per pound.

Further processing of turkey accounted for nearly the same proportion of total production during January–September 1987 as in 1986, about 46 percent. However, further processing during this period increased 9 percent over a year ago, indicating that the processed turkey meat market is expanding, although its share of total turkey consumption is not changing. But heavy stocks of other turkey may indicate that further processing supplies may have grown faster than demand. October whole turkey stocks increased 25 percent over 1986 while other turkey stocks increased 41 percent. Whole turkeys account for nearly the same proportion of October 1, 1987 stocks as they did in 1986, 79 percent.

Cold storage stocks of turkey were a record–breaking 641 million pounds to begin

Table 5--Turkey prices and price spreads, 1986-87

Item	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
						Cents per pound							
Farm price 1/													
1986	35.6	36.3	36.9	38.1	40.9	45.9	49.3	50.9	51.4	53.0	51.5	43.0	44.4
1987	34.9	35.3	37.6	36.5	35.0	34.5	33.1	31.4	30.8				
New York, hens 8-16 lbs 2/													
1986	60.3	61.7	63.9	64.6	67.1	73.8	77.9	80.5	81.2	83.2	80.7	71.1	72.2
1987	55.3	58.5	60.3	58.3	55.3	55.7	56.3	56.1	56.1				
4-region average retail price													
1986	106.3	107.8	104.8	104.2	103.4	102.3	105.6	109.5	111.9	112.9	108.1	102.1	106.6
1987	103.6	103.2	103.0	100.4	102.8	105.1	105.8	105.1	103.3				
Price spreads													
Retail-to-consumer													
1986	33.7	36.7	32.5	31.3	27.1	19.0	19.3	19.5	21.7	20.2	16.2	21.8	24.9
1987	39.8	37.4	35.4	33.4	37.3	40.1	41.1	54.5	50.3				
						December 1977=100							
Consumer pr. index													
1986	142.1	143.2	141.4	139.6	140.7	139.8	141.1	142.2	145.8	149.1	145.0	143.0	142.8
1987	144.2	142.0	142.5	139.5	142.1	142.3	142.7	142.1	139.3				

1/ Live weight. 2/ Wholesale, ready-to-cook.

the fourth quarter of 1987. These large stocks are putting downward pressure on prices during the rest of the current quarter, and the effects will most likely spill over into the first half of 1988. The large stocks, plus the sharp increase in fourth-quarter production over 1986, will provide ample quantities of turkey for holiday specials. If the specials do not reduce these large stocks towards 200 million pounds for the beginning of the year, first-quarter 1988 prices will most likely be well below those in 1987.

Wholesale prices for whole eastern-region hen turkeys were 56 cents per pound in the third quarter. October prices averaged 55 cents per pound, indicating further weakness. This is a sharp decline from 80 and 83 cents in the third quarter and October a year ago, respectively. With the large turkey and pork supplies available, fourth-quarter prices are expected to exhibit further weakness, dropping to 48-52 cents, rather than rising as usual during the Thanksgiving and holiday season. The hen turkey price for 1987 should average 54-56 cents. With the tremendous pressure on prices from carryover stocks at the end of 1987, and the sharp increase in first-quarter 1988 production, first-quarter prices may average 46-50 cents compared with 58 cents in 1987. Prices should begin to recover during the second half of 1988 if the increase in production slows as projected. However, prospects of slightly higher production costs and competition from large supplies of pork should hold turkey prices near the breakeven level.

Per capita consumption of turkey is estimated to increase nearly 13 percent in 1987 to 15 pounds. Twelve percent more turkey is expected to be consumed in 1988, raising per capita consumption to almost 17 pounds. Since 1980, the quarterly share of annual turkey meat consumption has changed only slightly. This was in contrast to the period between 1960 and 1980 when shares for the first three quarters of the year were growing.

Turkey Exports

U.S. turkey exports during January-August 1987, at 16.6 million pounds, were up about 15 percent from the previous year. Sales to Canada have nearly doubled and account for slightly over 20 percent of the total. Canadian turkey consumption is estimated to be up 12 percent, while their production has not kept pace, resulting in a

Table 6--Estimated costs and returns, 1986-87 1/

Year	Production costs		Wholesale		Net returns
	Feed	Total	Total costs 2/	Price 3/	
Market eggs (cts/doz)					
1986					
I	27.0	45.2	65.7	74.4	8.7
II	27.4	45.6	66.1	63.8	-2.3
III	25.3	43.5	64.0	71.3	7.3
IV	22.0	40.2	60.7	74.6	13.9
Year 4/	25.4	43.6	64.1	71.1	7.0
1987					
I	21.8	40.0	60.5	66.4	5.9
II	23.1	41.3	61.8	58.9	-2.9
III 5/	23.8	42.0	62.5	64.3	1.7
Broilers (cts/lb)					
1986					
I	14.7	22.7	44.7	50.4	5.7
II	15.0	23.0	45.0	54.2	9.2
III	15.0	23.0	45.0	66.5	21.5
IV	12.9	20.9	42.3	56.3	14.0
Year 4/	14.4	22.4	44.3	57.0	12.7
1987					
I	12.7	20.7	42.0	50.0	8.0
II	12.8	20.8	42.1	48.1	6.0
III 5/	14.3	22.3	44.2	48.6	4.4
Turkeys (cts/lb)					
1986					
I	20.9	34.6	59.6	60.8	1.3
II	21.7	35.4	60.6	72.3	11.7
III	22.1	35.8	61.1	83.1	22.0
IV	19.7	33.4	58.1	77.9	19.8
Year 4/	21.1	34.8	59.8	75.2	15.3
1987					
I	18.4	32.1	56.5	57.0	.5
II	18.2	31.9	56.1	58.7	2.6
III 5/	20.4	34.1	58.9	55.0	-3.9

1/ Costs and prices are weighted by monthly production. 2/ Based on farm cost converted to wholesale market value. 3/ Wholesale prices used are the 12-metro area egg price, 12-city weighted average broiler price, and a weighted average of 8-16 lb. young hens and 14-22 lb. toms in Central, Western, and Eastern Regions. 4/ Weighted average. 5/ Preliminary.

supply shortfall. Consequently, prices in Ontario and Quebec were nearly 70 percent above the U.S. price in early September.

West Germany continued to be a relatively large buyer, taking about 20 percent more than last year, but sales to Japan and Egypt dropped. Four West African countries have increased their purchases also.

Table 7--U.S. Turkey Exports to Major Importers, January-August, 1986-1987

Country or area	1986	1987
	1000 lbs.	
Canada	1,782	3,483
Federal Rep. of Germany	1,848	2,196
Western Samoa	1,156	1,049
Mexico	553	886
Hong Kong	729	868
Japan	1,268	751
Fed. States of Micronesia	0	697
Marshall Islands	0	659
Egypt	3,312	636
Leeward-Windward Is.	248	489
Senegal	0	434
Taiwan	0	412
Haiti	7	387
Jamaica	77	383
Togo	42	293
Cameroon	0	290
Bahamas	370	228
Gabon	199	204
Saudi Arabia	458	174
Pacific Is. Trust Terr.	1,062	0
Other	3,036	2,432
Grand Total	14,428	16,573

Broilers

Broiler production increased sharply during 1987, in response to 3 years of profitability. With profitability narrowing, the rate of increase should slow. Broiler meat production during 1987 will likely be about 8 percent greater than 1986, continuing a trend of increasing production and per capita consumption which has been occurring since 1960. During this period, retail broiler prices have remained the same or trended higher as production increased until 1987. However, after adjusting for inflation, the retail price of broiler meat has actually been falling as production increased. In part, the expansion in per capita consumption has also been the result of a lower broiler price relative to the other major meats. Increased production efficiency (lower real costs of production in deflated terms) has allowed broiler meat to be supplied at these lower real prices.

Broiler slaughter during January-September 1987 was more than 8 percent above the same period in 1986. Third-quarter production was almost 10 percent above a year ago. Chicks placed for

Table 8--Broiler chicks hatched and pullet chicks placed in hatchery supply flocks, 1985-87

Month	Broiler-type chicks			Pullet chicks placed in broiler hatchery supply flocks						
				Monthly placements			Cumulative placements 7-14 months earlier			
	1985	1986	1987	1985	1986	1987	1985	1986	1987	1988
	Thousands									
January	401,666	409,336	439,605	3,471	3,395	4,077	27,277	27,483	29,039	33,028
February	364,542	376,092	406,139	3,017	3,420	3,699	27,286	27,940	29,427	33,254
March	418,842	432,871	457,224	3,603	3,675	4,111	26,771	27,374	29,523	32,805
April	411,739	424,078	454,271	3,884	4,062	4,713	26,647	27,156	29,722	32,185
May	423,991	438,623	471,162	3,672	3,938	4,055	26,733	27,321	30,148	
June	410,815	428,691	458,337	3,162	3,515	4,181	26,225	27,002	30,242	
July	407,502	429,883	458,908	3,400	3,672	3,995	25,944	26,868	30,603	
August	406,426	415,991	449,920	3,165	3,846	3,974	25,895	26,591	30,742	
September	380,138	401,676	430,664	3,253	3,594	3,457	25,513	26,849	30,926	
October	382,559	416,193		3,182	3,846		25,981	27,124	31,365	
November	379,050	402,582		3,284	3,769		26,790	28,021	32,232	
December	414,886	437,287		3,750	4,423		27,384	28,706	32,693	

broiler slaughter, eggs in incubators, and a 1-percent increase in 1987 slaughter weights over 1986 indicate that fourth quarter production will continue at the same pace as the first 9 months.

Production in 1988 is estimated to increase 5 percent over 1987 based on hatchery capacity and profitability. The size of the broiler hatchery supply flock is one indicator of industry production capacity. Pullets placed in the supply flock in October will reach maturity approximately 7 months later (or April 1988) and commonly have a 7-month productive life. The chicks hatched from this flock will reach market about 2.5 months after the eggs are set in incubators. Using this indicator, the capacity of the broiler industry can be estimated through June 1988. The average increases in capacity for the first and second quarters of 1988 over 1987 were 15 and 13 percent, respectively. Hence, the broiler industry could increase production considerably in the first half of 1988.

The industry, however, appears to be slowing its expansion. The last projection of the broiler supply flock, for April 1988 and corresponding to July production, is 8 percent above the previous year. This first indicator of third-quarter production capacity is considerably below first- and second-quarter increases, indicating a slower growth rate in the last half of 1988. Yet the industry does not always use this capacity completely. As noted before, fourth-quarter 1987 production is estimated to increase by 8 percent over the previous year. Estimated capacity would have allowed almost a 15-percent increase.

Whether or not the industry uses its capacity to increase broiler meat production depends greatly upon past and future expectations of profitability. Net returns during 1987 are expected to be in the 4-5 cent per pound range, significantly less than the nearly 13 cents earned in 1986. Net returns are expected to be near breakeven in the fourth quarter of 1987 and through 1988. However, if production rises above the 5 percent increase predicted, net returns may fall below breakeven.

Prices during 1987 have fallen considerably below 1986 levels. The projected 1987 12-city wholesale broiler price of 47 to 48 cents per pound was down from 57 cents in 1986. The third-quarter price was nearly 49 cents per pound, down from 67 cents in 1986. The October 1987 price was 43 cents per pound. Fourth-quarter prices are expected to average 43-45 cents, moving downward because of seasonal factors and significant increases in competing supplies of other meats. With more pork and poultry supplies, 1988 broiler prices are expected to fall further, averaging 40-46 cents. Reduced nonfed or hamburger-type beef supplies during 1988 may act somewhat as a buffer against

Table 9--Broilers: Eggs set and chicks placed weekly in 12 commercial States, 1985-87 1/

Period 2/	Eggs set			Chicks placed		
Month and day 2/	1985/86	1986/87	Percent of previous year	1985/86	1986/87	Percent of previous year
	- - - Thousands - - -		Percent	- - - Thousands - - -		Percent
November						
15	107,572	111,920	104	74,717	78,065	104
22	107,422	112,435	105	82,146	82,639	101
29	106,877	111,341	104	81,550	86,872	107
December						
6	105,019	107,487	102	83,167	87,094	105
13	105,241	112,528	107	82,417	86,360	105
20	104,540	112,441	108	82,615	86,154	104
27	105,738	110,972	105	80,671	82,636	102
January						
3	105,736	112,239	106	80,302	87,426	109
10	104,929	112,724	107	80,928	86,370	107
17	104,770	112,986	108	81,859	85,671	105
24	105,404	112,882	107	81,538	86,904	107
31	108,075	112,933	104	80,854	86,482	107
February						
7	108,648	112,014	103	79,608	86,509	109
14	109,104	111,216	102	80,688	87,285	108
21	109,829	115,079	105	82,934	87,483	105
28	109,177	116,488	107	82,907	87,031	105
March						
7	109,856	116,092	106	83,467	86,840	104
14	109,260	115,863	106	84,160	88,959	106
21	108,250	114,802	106	85,298	90,621	106
28	110,140	117,294	106	85,881	90,026	105
April						
4	110,460	117,906	107	85,443	90,398	106
11	110,677	118,570	107	83,207	88,828	107
18	110,395	117,036	106	85,469	90,892	106
25	108,137	116,956	108	85,332	92,484	108
May						
2	111,255	115,800	104	85,533	92,095	108
9	110,057	118,008	107	85,285	91,205	107
16	111,227	118,061	106	83,996	90,402	108
23	111,069	117,457	106	86,487	90,787	105
30	111,279	119,303	107	85,652	92,252	108
June						
6	111,516	118,542	106	86,167	91,576	106
13	110,795	117,880	106	85,494	91,223	105
20	110,838	118,958	107	85,975	92,237	107
27	105,571	115,620	110	85,939	93,280	109
July						
4	110,117	109,321	99	85,830	91,953	107
11	109,891	115,523	105	86,494	91,740	106
18	110,171	113,937	103	81,253	90,144	111
25	109,324	113,876	104	84,366	84,701	100
August						
1	108,800	113,436	104	83,908	89,454	107
8	106,725	113,167	106	82,990	87,379	105
15	106,058	112,929	106	81,299	88,059	108
22	108,128	112,831	104	80,056	88,048	110
29	108,137	113,332	105	77,814	87,215	112
September						
5	105,998	111,511	106	79,070	86,597	110
12	105,154	107,605	102	80,804	86,511	106
19	103,796	105,756	102	82,698	87,741	106
26	106,794	109,237	103	80,765	86,550	107
October						
3	109,679	114,480	104	80,844	84,037	104
10	107,956	110,955	103	79,043	81,388	103
17	100,314	101,189	101	81,120	84,103	104
24	103,092	102,326	99	83,824	89,081	106
31	108,830			81,482		
November						
7	112,545			76,349		

1/ 12 States: Ala., Ark., Calif., Del., Fla., Ga., Md., Miss., N.C., Pa., Tex., and Va. 2/ Weeks in 1986/87 and corresponding weeks in 1985/86.

steeper declines. Prices during the first quarter of 1988 are also expected to average 40–46 cents. Prices are expected to follow normal seasonal patterns.

Per capita consumption in 1987 is expected to rise 6 percent over 1986 to a little more than 60 pounds ready–to–cook weight. Expectations are that per capita consumption in 1988 will rise another 5 percent to more than 63 pounds. The increases in 1987 broiler meat exports and population account for the difference between the 8–percent increase in production and the 6–percent increase in per capita consumption estimates.

Table 10--Federally inspected young chicken slaughter, 1986–87

Year	Number	Average weight	Live-weight pounds	Certified RTC
	Million	Pounds	Million	Pounds
1986				
I	1,099	4.30	4,722	3,414
II	1,189	4.24	5,045	3,673
III	1,196	4.17	4,988	3,620
IV	1,159	4.25	4,921	3,558
Year	4,643	4.24	19,676	14,266
1987				
I	1,187	4.33	5,145	3,732
II	1,253	4.29	5,369	3,910
III	1,301	4.20	5,470	3,966

Broiler Exports

U.S. broiler exports during January–August were up 44 percent over the same period last year, with Japan still the largest buyer. However, even with Japan's imports up about 20 percent, its share of U.S. exports fell to 24 percent, compared to 29 percent during 1986. Along with Iraq and Egypt, large export increases were made to Canada (up 80 percent), Hong Kong, and the Netherlands Antilles. Canadian consumption of chicken is up strongly, and tight Canadian supplies in early September pushed prices in Toronto to a level about 80 percent above the U.S. average.

Exports to Iraq and Egypt were boosted by large sales under the Export Enhancement Program (EEP), which were announced in late 1985 for Egypt and late 1986 for Iraq. As of October 15th, total EEP sales to Egypt were 163 million pounds, and to Iraq 132 million pounds. Exports from these sales stretched

Table 11--Young chicken prices and price spreads, 1986–87

Item	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
						Cents per pound							
Farm price 1/													
1986	30.6	29.2	29.7	29.5	32.2	35.4	42.7	43.9	36.5	39.3	34.9	30.6	34.5
1987	31.1	30.1	29.1	29.6	30.0	27.6	28.1	31.6	28.5				
Wholesale RTC 12-city av. 2/													
1986	51.7	49.0	50.3	50.0	54.6	58.3	69.1	69.7	61.0	61.6	57.5	50.0	56.9
1987	51.8	49.8	48.5	48.6	50.5	45.5	47.0	52.6	46.4				
U.S. av. retail price													
1986	76.6	77.1	76.7	75.2	76.9	79.5	88.9	95.8	91.0	90.0	87.8	86.5	83.5
1987	82.1	83.2	80.4	79.2	78.2	77.1	75.5	78.5	79.3				
Price spreads Retail-to-cons.													
1986	19.5	21.8	21.0	19.2	16.3	15.5	16.4	20.0	21.6	20.5	22.6	30.0	20.4
1987	24.3	26.8	25.2	25.3	21.2	25.3	21.2	31.8	33.1				
						1967 = 100							
Retail pr. index Wh. chickens													
1986	215.3	216.5	217.3	213.0	217.5	225.2	249.9	271.2	257.3	256.1	252.2	248.1	236.6
1987	245.0	243.5	236.2	231.9	231.5	228.8	225.4	233.7	235.0				

1/ Live weight. 2/ Beginning May 1983, 12-city composite weighted average.

Table 12--U.S. Broiler Exports to Major Importers, January-August, 1986-1987

Country or area	1986	1987
	1000 lbs.	
Japan	98,558	117,362
Iraq	0	79,298
Hong Kong	54,393	73,319
Egypt	16,816	46,398
Singapore	34,559	33,446
Canada	17,856	32,212
Jamaica	33,195	28,532
Mexico	19,298	16,520
Leeward-Windward Is.	15,326	14,044
Netherlands Antilles	7,027	10,648
French Pacific Is.	6,052	7,720
Spain	2,668	3,609
Saudi Arabia	3,330	3,568
Federal Rep. of Germany	6,468	2,241
Bermuda	1,624	2,046
United Arab Emirates	1,078	1,775
Bahamas	1,393	1,535
Barbados	2,648	1,481
Netherlands	1,803	1,367
France	2,257	1,029
Pacific Is. Trust Terr.	2,056	0
Other	16,937	13,586
Grand Total	341,029	490,707

Table 13--U.S. Mature Chicken Exports to Major Importers, January-August 1986-1987

Country or area	1986	1987
	1000 lbs.	
Canada	5,155	3,788
Mexico	2,353	2,414
Jamaica	63	1,883
Egypt	0	1,185
Iraq	0	953
Japan	325	570
Hong Kong	121	440
Netherlands	0	437
Spain	0	340
Bahamas	221	330
Netherlands Antilles	91	182
French Pacific Is.	320	85
Leeward-Windward Is.	505	71
Saudi Arabia	43	56
Singapore	0	46
United Arab Emirates	23	46
Federal Rep. of Germany	0	27
Bermuda	34	14
Pacific Is. Trust Terr.	1,013	0
Other	386	243
Grand Total	10,653	13,110

out over many months. On October 2nd, a new EEP initiative to sell 22 million pounds to Iraq was announced. Products for filling this initiative will not likely move in 1987.

Eggs

Egg producers are continuing to expand production in 1987 in response to fairly minor profits from the middle of 1985 through early 1987. Egg production during 1987 is expected to be about 1-2 percent ahead of 1986. (Increases in hatching egg production have been responsible for about half of this increase.) In response to this heavy production, the expected 1987 price has fallen about 10 cents per dozen from 1986. The weaker prices appear to be caused by increased supplies and declining consumer demand. Per capita consumption of eggs has declined from nearly 261 in 1983 to 251 in 1986, about 3 eggs per year. Per capita consumption in 1987 is expected to remain at approximately 251 eggs.

Egg production during the January-September period was up more than 1 percent from the same period in 1986. Third-quarter production was up almost 2 percent over third-quarter 1986. Fourth-quarter production should increase slightly over a year earlier, bringing the year's production to 1-2 percent more than in 1986. The laying flock averaged 281 million birds during September, approximately 2 percent larger than in September 1986. This flock is a little older than last year, as 1 percent more have completed a molt this year compared to a year ago. The potential additions to this flock are also increasing. Potential layers on September 1, 1987 (hens and pullets of laying

Table 14--Layers on farms and eggs produced, 1986-87 1/

Quarters	Number of layers		Eggs per layer		Eggs produced	
	1986	1987	1986	1987	1986	1987
	- Millions -		- Number -		Million dozen	
I	280	283	60.9	60.9	1,421.9	1,435.8
II	277	280	62.7	63.0	1,446.8	1,472.5
III	273	277	62.4	62.1	1,418.0	1,433.3
IV	278		61.5		1,422.8	
Annual	277		247.5		5,709.5	

1/ Marketing year beginning December 1.

Table 15--Force moltings and light-type hen slaughter, 1985-87

Month	Force molted layers 1/						Light-type hens slaughtered under Federal inspection 2/ (Number of Head)		
	Being molted			Molt completed					
	1985	1986	1987	1985	1986	1987	1985	1986	1987
	- - - - Percent - - - -						- - - Thousands - - -		
January	2.3	3.6	4.2	17.8	25.2	20.9	18,928	13,890	13,004
February	4.6	4.8	4.6	16.6	23.5	19.1	13,674	12,221	13,196
March	3.8	4.2	3.8	15.6	24.4	20.1	13,311	14,201	13,451
April	3.0	2.8	2.8	15.6	24.0	19.6	13,819	14,761	14,752
May	5.6	5.4	5.4	14.6	22.1	18.8	12,336	13,277	12,871
June	6.0	4.4	6.4	16.0	22.8	18.5	9,079	14,875	13,933
July	5.4	5.4	4.7	19.1	21.9	20.5	9,774	12,280	12,481
August	4.4	3.9	4.9	20.3	21.4	21.0	10,204	11,682	12,518
September	4.9	3.9	5.3	21.2	20.8	21.7	9,317	11,231	10,813
October	5.8	4.7		21.6	20.2		9,336	12,472	
November	5.3	4.2		23.6	20.7		9,170	10,019	
December	3.2	2.5		25.2	22.0		13,127	13,006	

1/ Percent of hens and pullets of laying age in 15 selected States. 2/ Revisions include data from late reports or other corrections developed by the Food Safety and Inspection Service.

Table 16--Egg-type chick hatchery operations, 1985-1987

Month	Hatch			Eggs in incubator first of month, changes from previous year		
	1985	1986	1987	1985	1986	1987
	- - Thousands - -			- - Percent - -		
Jan.	28,289	34,538	34,175	-20	+13	+5
Feb.	28,419	34,826	35,176	-24	+25	+4
Mar.	36,923	39,523	42,339	-23	+11	+5
Apr.	40,873	42,359	42,066	-17	+5	-2
May	38,967	42,465	41,422	-19	+5	+1
June	33,838	37,253	38,003	-26	+6	+1
July	32,094	33,575	33,461	-18	+10	-4
Aug.	32,503	33,382	35,292	-11	+2	+8
Sept.	33,568	32,638	32,495	0	-2	+4
Oct.	33,593	32,444		+7	-3	+9
Nov.	33,606	27,456		+15	-19	
Dec.	34,164	33,262		+25	-4	

age plus pullets 3 months and older not of laying age), were up almost 2 percent from a year ago.

Pullet placements for the laying flock during June-September (not included in the potential layers on September 1) were also up 2 percent from a year ago. This suggests that production in the first half of 1988 is likely to remain near or above the first half of 1987, unless light-type hen slaughter increases.

Table 17--Shell eggs broken and egg products produced under Federal inspection, 1986-87

Period	Shell eggs broken	Egg products produced 1/		
		Liquid 2/	Frozen	Dried
	Thou. doz.	Thou. lbs.	Thou. lbs.	Thou. lbs.
1986				
January	67,415	50,206	28,122	6,574
February	61,356	46,368	24,252	6,556
March	59,034	45,856	23,221	5,429
April	74,396	55,105	30,434	7,760
May	74,076	58,477	27,510	8,529
June	78,479	61,323	30,830	7,724
July	78,719	59,815	31,381	7,229
August	74,041	56,353	28,228	7,102
September	72,314	55,668	27,516	6,578
October	80,077	61,450	32,255	8,045
November	63,605	50,759	26,584	6,481
December	73,929	54,255	31,866	8,084
1987				
January	73,724	60,730	29,042	8,981
February	71,122	56,722	27,250	8,159
March	80,467	62,181	31,909	8,725
April	74,135	59,667	27,750	8,428
May	77,451	63,678	28,307	9,242
June	85,391	70,737	27,781	9,788
July	86,461	66,418	30,972	9,622
August	79,928	63,434	27,454	8,356
September	78,419	66,554	28,455	7,157

1/ Includes ingredients added. 2/ Liquid egg products produced for immediate consumption and for processing.

Table 18--Egg prices and price spreads, 1986-87

Item	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
							Cents per dozen						
Farm price 1/													
1986	58.3	54.0	61.4	49.2	48.8	42.1	51.9	55.3	55.4	50.3	60.0	58.3	53.8
1987	51.5	50.0	46.0	46.5	40.1	41.2	41.8	40.9	51.3				
New York (cartoned) 2/ Grade A, large													
1986	73.3	68.3	80.8	65.7	65.2	59.2	73.0	72.8	72.6	69.6	77.2	75.5	71.1
1987	67.1	65.2	62.0	62.4	55.6	58.7	59.1	63.2	68.3				
4-region average, Grade A, large Retail price													
1986	90.1	86.6	88.7	89.0	82.0	79.5	83.3	91.3	86.8	85.5	89.7	91.0	87.0
1987	86.2	82.3	80.0	78.6	76.3	71.1	76.3	73.0	83.7				
Price spreads Retail-to-consumer													
1986	14.9	17.2	10.0	21.9	16.8	20.5	12.1	18.8	14.3	15.4	11.7	14.4	15.7
1987	17.4	14.5	16.5	15.3	20.8	12.7	16.4	24.7	16.3				
							1967=100						
Consumer price index													
1986	194.4	186.7	190.8	188.8	173.7	166.9	175.2	192.9	186.0	186.2	195.8	198.6	186.3
1987	193.2	187.4	180.0	174.6	169.5	161.2	168.2	164.4	187.0				

1/ Market (table) eggs including eggs sold retail by the producer; data not available prior to 1982.
2/ Price to volume buyers.

Table 19--Shell eggs: Supply and utilization by quarters, 1985-87 1/

Year	Supply						Utilization				
	Beginning stocks	Production	Hatching use 2/	Eggs broken	Imports	Total supply	Ending stocks	Exports and shipments	Military	Civilian disappearance	
										Total	Per capita 3/
				- - - - Million dozen - - - -							Number
1985											
I	0.9	1,430.5	136.1	182.7	0.9	1,113.5	0.7	13.9	4.4	1,094.5	55.6
II	.7	1,407.5	139.7	216.7	2.3	1,054.1	.6	15.0	5.1	1,033.5	52.4
III	.6	1,407.7	133.7	214.1	1.1	1,061.6	.7	12.9	4.0	1,044.0	52.8
IV	.7	1,442.8	138.6	199.1	4.3	1,110.0	.7	14.2	4.3	1,090.8	55.0
Year	.9	5,688.4	548.1	812.6	8.6	4,337.2	.7	56.0	17.8	4,262.7	215.7
1986											
I	.7	1,423.3	139.6	187.8	3.0	1,100.8	.6	13.0	4.3	1,082.9	54.5
II	.6	1,421.2	144.7	227.0	3.3	1,053.6	1.1	12.4	3.8	1,036.3	52.0
III	1.1	1,413.3	140.9	225.1	1.2	1,049.7	.9	13.5	4.0	1,031.3	51.7
IV	.9	1,457.2	141.1	217.6	3.4	1,102.7	.7	13.9	3.9	1,084.2	54.2
Year	.7	5,714.9	565.9	857.4	11.0	4,303.3	.7	52.7	16.0	4,233.9	239.4
1987 4/											
I	.7	1,442.5	147.5	225.3	1.9	1,072.3	1.0	14.1	3.9	1,053.3	52.5
II	1.0	1,437.5	153.6	237.0	0.1	1,048.0	1.0	13.7	3.4	1,029.9	51.2
III	1.0	1,439.2	147.8	244.8			1.0		4.2		

1/ Totals may not add because of rounding. 2/ Hatching use for 1986 calculated by the new method. 3/ Calculated from unrounded data. 4/ Preliminary.

Table 20--Total eggs: Supply and utilization by quarters, 1985-87

Year	Supply					Utilization				
									Domestic disappearance	
	Production	Imports 1/	Beginning stocks	Total supply	Ending stocks 1/	Exports and shipments 1/	Eggs used for hatching	Military 1/	Civilian	
									Total	Per capita 2/
	- - Million dozen - -									Number
1985										
I	1,430.5	2.2	11.1	1,443.8	11.0	24.5	136.1	5.1	1,267.2	64.4
II	1,407.5	3.3	11.0	1,421.8	12.2	24.5	139.7	5.6	1,239.7	62.8
III	1,407.7	2.3	12.2	1,422.2	13.1	25.0	133.7	4.5	1,245.9	63.0
IV	1,442.8	4.9	13.1	1,460.8	10.7	27.0	138.6	5.0	1,279.4	64.5
Year	5,688.4	12.7	11.1	5,712.2	10.7	101.0	548.1	20.2	5,032.2	254.7
1986										
I	1,423.3	3.6	10.7	1,437.5	8.7	33.4	139.2	4.6	1,251.6	63.0
II	1,421.2	4.0	8.7	1,433.9	11.9	28.2	144.7	4.2	1,245.0	62.5
III	1,413.3	2.2	11.9	1,427.4	11.5	36.5	140.9	4.5	1,234.0	61.8
IV	1,457.2	3.9	11.5	1,472.6	10.4	31.5	141.1	4.2	1,285.4	64.2
Year	5,714.9	13.7	10.7	5,739.3	10.4	129.6	565.9	17.5	5,016.0	251.4
1987 3/										
I	1,442.5	2.6	10.4	1,455.5	11.9	30.9	147.5	4.5	1,260.6	62.8
II	1,437.5	1.2	11.9	1,450.7	13.8	28.5	153.6	4.1	1,250.6	62.1
III	1,439.2		13.8		13.5		147.8	4.6		

1/ Shell eggs and the approximate shell-egg equivalent of egg products. 2/ Calculated from unrounded data. 3/ Preliminary.

A longer-term indicator of trends in egg production capacity is provided by the egg-type hatchery supply flock. This is the parent stock of the egg-laying flock and represents the capacity to increase the egg laying flock. Additions to or reductions from this flock reflect expectations of orders for pullets to enter the laying flock approximately 7 months after the egg is laid.

Whether this capacity is utilized in 1988 depends upon past and future expectations of profitability. Estimated net returns in the third quarter of 1987 were above breakeven, and are expected to remain there until the second quarter of 1988, when the seasonal downturn will put net returns below or near breakeven levels. The 1987 net return is expected to be half the 1986 level of 7 cents per dozen. Costs are projected to rise slightly in 1988 as feed costs edge upward a little. Hence, with expectations of near breakeven returns, and a continuation of the decline in per capita consumption, more layers may be slaughtered.

Prices in 1987 were considerably below 1986 levels due to increased production. The third-quarter New York Grade A large wholesale egg price was 64 cents per dozen, down from 73 in 1986. The October price was 60 cents, down from 69 in 1986. Even with seasonal increases in demand for the holidays increasing, fourth-quarter prices are expected to average 63-65 cents, down from 74 cents last year as production increases. The 1987 price may average 63-64 cents, down from 71 cents last year. If production decreases slightly in 1988, as projected, supplies will be in better balance with demand. Consequently, the average price is expected to be in the 60-66 cent range, similar to 1987. The first-quarter 1988 average price is expected to be in the 60-66 cent range, but weaken seasonally during the second quarter and rise seasonally towards 66 cents in the fourth quarter.

Eggs broken, at 923 million dozen during October 1, 1986-September 30, 1987, were up 10 percent above a year ago. Breaking use has

Table 21--U.S. Egg Exports (1000 dozens) to Major Importers, January-August, 1986-1987 /1

Country or Area	1986	1987
Japan	46,392	32,295
Canada	7,785	9,521
Hong Kong	4,515	6,368
Trinidad-Tobago	1,375	1,406
Jamaica	618	1,237
Denmark	34	1,143
Dominican Republic	443	1,111
Switzerland	660	1,013
United Kingdom	486	988
Haiti	565	942
Federal Rep of Germany	711	815
Mexico	1,601	518
Peru	535	480
Surinam	395	470
Korea	273	470
Barbados	249	305
Singapore	77	289
Panama(inc. Canal Zone)	148	272
Colombia	113	229
Venezuela	151	220
Philippines	84	205
Netherlands	30	185
Netherlands Antilles	107	148
Marshall Islands	0	116
Austria	38	110
Pacific Is (Trust Terr)	230	0
Other	1,774	1,937
Grand Total	68,900	62,029

1/ Shell, and shell equivalent of egg products.

been trending about 3 percent higher each year since 1960. The further processed market is the main egg breaking market. In addition, breaking egg usage is a residual market for table eggs. Increases in eggs broken may indicate overproduction has occurred in the table egg market. Table eggs can be stored for longer periods in dried or frozen forms. Cold storage stocks were up 22 percent from a year ago, perhaps indicating more eggs have been broken than were needed to meet demand. Increases in cold storage have also occurred because the amount of egg products exported was down 22 percent in January through August 1987 from 1986.

Egg Exports

Total U.S. egg exports from January through August 1987 were running about 10 percent behind the same period in 1986. Sales to the expanding Japanese market were down 30 percent as the European Community exported fivefold more egg products to Japan during the first 5 months of 1987, aided by subsidized pricing. U.S. exports to Mexico were down also, but many other countries increased their purchases of U.S. eggs. Exports to Canada were up 22 percent as Canadian production, up nearly 1 percent, was short of requirements for hatching and breaker eggs. Exports to the growing Hong Kong market and the Dominican Republic were assisted by the Export Enhancement Program. Recent EEP sales to Iraq of nearly 15 million dozen, and to the Near East of slightly more than 2 million dozen, will boost exports in late 1987 and into 1988.

Egg Imports

U.S. imports of eggs during January-August were down 52 percent from last year, totalling only 4.3 million dozen. Lower U.S. prices this year and a lower exchange value of the dollar are contributing factors. Slightly over 50 percent of the imports enter from Canada as egg products. Israel and the Netherlands each provided about 20 percent. Imports from Mexico, Venezuela, Finland, and the Netherlands dropped sharply compared to the same period last year.

LIVESTOCK AND RED MEATS

Hogs

The September *Hogs and Pigs* report indicated that producers continued to increase their herds and followed their plans to have more sows farrow than a year ago. The increases are due to a sustained period of relatively high producer returns since mid-1986. The rise in the June-August pig crop was moderated by a slight drop in pigs per litter, the first in 12 quarters. The decline was due in part to a larger proportion of gilts in the breeding herd.

As of September 1, hog producers in the 10 quarterly States intended to moderately increase the number of sows farrowing over the next 6 months. The September- November intentions were up 7 percent, the same as reported in June, despite the continued high profitability in hog production. The outlook calls for profitability to continue into 1988, but producers may be near a breakeven position by the second quarter. The expansion in hog numbers is probably being moderated by expectations of declining returns, and the possibility that producers are using recent profits to strengthen their financial positions.

Table 22--Hogs on farms, farrowings, and pig crops, 10 States 1/

Item	1984	1985	1986	1987	1986/85	1987/86
		1,000 head			Percent change	
June 1 Inventory	41,915	41,650	37,845	40,580	-9	+7
Breeding	5,771	5,397	4,840	5,290	-10	+9
Market	36,144	36,253	33,005	35,290	-9	+7
Under 60 lb	15,437	15,168	13,775	15,055	-9	+9
60-119 lb	9,187	9,100	8,275	8,740	-9	+6
120-179 lb	6,361	6,545	6,170	6,500	-6	+5
180 + lb	5,159	5,440	4,785	4,995	-12	+4
September 1 Inventory	43,180	41,820	39,335	42,875	-6	+9
Breeding	5,550	5,377	4,840	5,295	-10	+9
Market	37,630	36,443	34,495	37,530	-5	+9
Under 60 lb	14,957	14,630	13,725	14,950	-6	+6
60-119 lb	9,209	8,820	8,380	9,090	-5	+8
120-179 lb	7,835	7,406	7,020	7,665	-5	+9
180 + lb	5,629	5,587	5,370	5,825	-4	+8
Sows farrowing						
December-February	1,964	1,955	1,863	1,957	-5	+5
March-May	2,481	2,420	2,161	2,337	-11	+8
December-May	4,445	4,375	4,024	4,294	-8	+7
June-August	2,259	2,191	2,034	2,262	-7	+11
September-November	2,316	2,265	2,150	2,307 3/	-5	+7
June-November	4,575	4,456	4,184	4,569 3/	-6	+9
Pig crops						
December 2/-February	14,288	14,690	14,254	15,156	-3	+6
March-May	18,814	18,762	16,878	18,485	-10	+10
December 2/-May	33,102	33,452	31,132	33,641	-7	+8
June-August	17,158	16,941	15,853	17,520	-6	+11
September-November	17,420	17,255	16,729		-3	
June-November	34,578	34,196	32,582		-5	
		Number				
Pigs per litter						
December 2/-February	7.27	7.51	7.65	7.74	+2	+1
March-May	7.58	7.75	7.81	7.91	+1	+1
December 2/-May	7.45	7.65	7.74	7.83	+1	+1
June-August	7.60	7.73	7.79	7.75	+1	-1
September-November	7.52	7.62	7.78		+2	
June-November	7.56	7.67	7.79		+2	

1/ Georgia, Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Carolina, Ohio.
2/ December preceding year. 3/ Intentions.

The September market hog inventory and farrowing intentions suggest that 1988 pork production may be up about 11 percent over 1987.

Inventory Up 9 Percent

The September 1 inventory of all hogs and pigs in the 10 States conducting quarterly surveys totaled 42.8 million head, up 9 percent from a year ago and the highest September inventory since 1984. Breeding inventory, at 5.3 million head, was 9 percent above a year earlier. The market hog inventory totaled 37.5 million head, up 9 percent, and the highest September figure since 1984.

The June-August pig crop was 17.5 million head, 11 percent above last year, and sows farrowing totaled 2.26 million head, up 11 percent. In March producers indicated an intent to farrow 8 percent more sows in June-August than a year earlier, but by June, these intentions increased to 9 percent. Sows farrowing in June-August were bred in February-April, when net returns were relatively high, and increased sharply in April over March and February. Pigs per litter averaged 7.75 in June-August, compared with 7.79 a year earlier.

Farrowings To Continue Increasing

As of September 1, producers indicated intentions to have 2.31 million sows farrow during September-November of this year, up 7 percent from 1986. Farrowing intentions for

December 1987- February 1988 are 8 percent above a year earlier and 13 percent more than 1985/86. Because of the previous years of low or negative returns, financial stress, and tighter lending standards, the moderate increase was expected. With debt capital more difficult to obtain, the expansion may be largely internally financed, which would in itself be a moderating influence.

Table 23--Sow slaughter balance sheet, 10 States

Item	1984	1985	1986	1987
		Million head		
December 1 breeding 1/	5.6	5.3	5.3	5.2
December-February				
Comm. sow slaughter 2/	.8	.8	.7	.6
Gilts added	.6	.7	.3	.6
March 1 breeding	5.4	5.2	4.9	5.2
March-May				
Comm. sow slaughter 2/	.7	.7	.6	.6
Gilts added	1.1	.9	.5	.7
June 1 breeding	5.8	5.4	4.8	5.3
June-August				
Comm. sow slaughter 2/	.9	.8	.7	.8
Gilts added	.7	.8	.7	.8
September 1 breeding	5.6	5.4	4.8	5.3
September-November				
Comm. sow slaughter	.9	.8	.7	
Gilts added	.6	.7	1.1	

1/ December previous year. 2/ 75 percent of estimated U.S. commercial sow slaughter.

Pork Production To Increase

The March-May pig crop and the September 1 inventory of market hogs weighing 60-179 pounds are indicators of October-December hog slaughter. Based on these indicators, fourth-quarter slaughter is projected to be about 22 million head, 7 to 9 percent above a year earlier. If realized, slaughter as a percentage of the U.S. March-May pig crop and the September 1 market hog inventory would be about the same as the 5-year average. The average dressed weight is expected to be near last year's 178 pounds. So, commercial production will total around 3,900 million pounds, up 8 percent.

The June-August pig crop and the September 1 inventory of market hogs weighing under 60 pounds are indicators of first-quarter slaughter. Slaughter as a percentage of the pig crop and market hog inventory is expected to be higher than the 5-year average in 1988, as it was in 1987. Hog prices are expected to be down sharply from summer 1987 and moderately from fall 1987. Commercial slaughter in the first quarter is expected to be 8 to 10 percent over the same period a year ago. The average dressed weight may be a little lighter than 1987's 178 pounds. Higher corn prices and price discounts on heavier weight hogs will probably encourage producers to market hogs somewhat lighter

Table 24--Commercial hog slaughter 1/ and production

Year	Barrows and gilts	Sows	Boars	Total 2/	Average dressed weight	Commercial production 2/
		- - - 1,000 head - - -			Pounds	Million pounds
1985:						
I	19,726	927	217	20,871	173	3,618
II	20,171	947	225	21,343	175	3,743
III	19,260	1,075	222	20,556	173	3,553
IV	20,445	1,065	211	21,721	176	3,814
Year	79,602	4,015	875	84,492	174	14,726
1986:						
I	19,272	920	187	20,379	175	3,570
II	19,224	896	196	20,316	176	3,568
III	17,365	999	210	18,573	174	3,237
IV	19,223	927	179	20,330	178	3,623
Year	75,084	3,742	772	79,598	176	13,998
1987: 3/						
I	18,488	771	165	19,934	178	3,540
II	17,029	839	186	18,728	177	3,325
III	18,197	1,008	187	19,392	175	3,384

1/ Classes estimated. 2/ Totals may not add due to rounding. 3/ Preliminary.

than last year. Commercial production is estimated at 3,850 million, up 9 percent from 1987.

Commercial production in the second quarter of 1988 is projected at 3,825 million pounds, up 15 percent from a year ago. Based on producers' September 1 farrowing intentions and a continued rise in pigs per litter, the September–November pig crop is expected to be up nearly 8 percent. In 1987, second-quarter commercial slaughter as a percentage of the pig crop was 113, compared to the 5-year average of 119. In 1988, commercial slaughter is expected to be about 120 percent of the pig crop. Commercial slaughter in the second quarter is expected to be 14 to 16 percent above a year ago. The average dressed weight is expected to be about the same as in 1987, at 177 pounds.

Based on September 1 intentions and a slight rise in pigs per litter, the December 1987–February 1988 pig crop is expected to be about 8 percent larger than 1986/87. Commercial slaughter in the third quarter of 1988 is projected at about 22 million head, up 13 percent from 1987. The projected slaughter as a percentage of the estimated pig crop is equal to the 5-year average. In 1987, third-quarter slaughter was 128 percent of the December 1986–February 1987 pig crop. The average weight is expected to be about the same as 1987's 174 pounds. Thus, commercial production is expected to total 3,825 million pounds in third-quarter 1988, up 13 percent from 1987.

With profitability expected to continue through the breeding season corresponding to March–May 1988 farrowings, the spring pig crop is projected to be up about 7 percent. In turn, fourth-quarter commercial slaughter is expected to be 6 to 8 percent higher than in 1987. With no change in the average dressed weight, commercial pork production would be about 4,150 million pounds, up 6 percent from 1987.

Cold Storage Stocks

Stocks of pork in cold storage approached record lows in 1987. Expectations of increasing pork production and large discounts in deferred future prices offered little incentive to accumulate inventory in the first half of the year. When actual production fell short of expectations, the already-reduced stocks were depleted.

This situation is not likely to repeat itself in 1988. Pork production seems to be moving back in line with expectations based on the *Hogs and Pigs* reports, and lower cash prices may increase the incentive to move pork into storage. Additionally, there may be a natural tendency to replenish inventories after the excessive drawdowns of 1987. These factors may cause cold storage stocks to return to more normal levels.

Hog Prices To Decline

After increasing for 2 consecutive years, hog prices are expected to decline substantially from 1987 to 1988. Expanded pork supplies will be the primary influence. While beef supplies may be lower, they are likely to be offset by larger poultry supplies. Macroeconomic conditions may be about the same as in 1987. Recent disruptions have increased uncertainty regarding 1988.

Coinciding with an abrupt increase in slaughter, hog prices fell sharply in September. Third-quarter prices averaged $58.97 at the seven major markets, down 3.5 percent from a year ago, and the first year-to-year decline since the first quarter of 1986. The market continued to move lower in October, averaging close to $49, as weekly kills climbed to 3-year highs and market weights increased.

Barrow and gilt prices may average $44 to $48 in the fourth quarter of 1987. If so, the drop of 20 to 25 percent from the third quarter will be the largest seasonal decline since 1976, which was also a year of expansion in the hog industry. Ham prices may be pressured by record large turkey supplies, and a greater-than-normal seasonal increase in pork production. Despite exceptionally low cold storage stocks, per capita ham supplies are projected to be 6 percent higher than a year ago, and up 17 percent from the third quarter. Turkey prices, which normally strengthen in the fourth quarter, are expected to decline. The combination of these factors suggests that seasonal strength in ham prices may be dampened, exerting downward pressure on hog prices.

The erosion in hog prices is forecast to continue through the first quarter of 1988,

Table 25--Federally inspected hog slaughter

Week ended	1985	1986	1987
		Thousands	
Jan. 1 1/	1,238	1,153	1,069
5	1,295	1,250	1,258
12	1,679	1,634	1,683
19	1,615	1,654	1,659
26	1,528	1,563	1,527
Feb. 2	1,565	1,506	1,500
9	1,582	1,526	1,455
16	1,508	1,512	1,502
23	1,539	1,501	1,395
Mar. 2	1,608	1,606	1,533
9	1,635	1,635	1,555
16	1,638	1,650	1,577
23	1,647	1,556	1,573
30	1,642	1,579	1,500
Apr. 6	1,569	1,518	1,529
13	1,623	1,633	1,553
20	1,676	1,651	1,498
27	1,662	1,619	1,393
May. 4	1,702	1,637	1,453
11	1,699	1,606	1,475
18	1,705	1,560	1,440
25	1,580	1,518	1,445
June 1	1,361	1,307	1,226
8	1,592	1,471	1,383
15	1,561	1,459	1,372
22	1,535	1,373	1,341
29	1,476	1,329	1,356
July 6	1,171	1,118	1,193
13	1,523	1,390	1,360
20	1,427	1,349	1,345
27	1,400	1,280	1,354
Aug. 3	1,474	1,312	1,330
10	1,556	1,338	1,372
17	1,524	1,368	1,445
24	1,531	1,385	1,404
31	1,601	1,419	1,475
Sept. 7	1,429	1,257	1,548
14	1,690	1,492	1,363
21	1,667	1,504	1,709
28	1,681	1,503	1,620
Oct. 5	1,644	1,515	1,658
12	1,686	1,546	1,638
19	1,620	1,529	1,739
26	1,654	1,551	1,687
Nov. 2	1,668	1,580	
9	1,654	1,576	
16	1,654	1,537	
23	1,697	1,557	
30	1,328	1,308	
Dec. 7	1,656	1,530	
14	1,566	1,548	
21	1,655	1,503	
28	1,153	1,070	

1/ Corresponding dates-1985: 1986, December 28; 1987, December 27.

before stabilizing around $40 in mid-spring. Per capita pork supplies, which typically decline from fourth to first quarter, are expected to remain steady at about 18 pounds, and this may limit seasonal price advances. Compared with a year ago, pork supplies are likely to be up 8 percent in the first quarter, while combined supplies of beef and poultry are projected to show an increase of nearly 2 percent. As a result, hog prices may average only $41 to $47 over the first 3 months of the year.

Weekly slaughter rates are expected to increase about 100,000 head from February to April, peaking near 1.75 million. Accordingly, barrow and gilt prices may decline during this time, possibly falling into the high $30's as spring lows are established. Per capita pork supplies could be up nearly 13 percent from a year ago in the second quarter, with supplies of competing meats up about 2 percent. With some price recovery anticipated toward the end of the period, prices may average $37 to $43 for the quarter.

In the second half of 1988, the average price of barrows and gilts is expected to be near the second quarter. Prices may come off their summer highs earlier in the third quarter than in 1987, as both cold storage stocks and hog slaughter could be substantially higher. Price declines in the final quarter may again push values into the $30's, but should still average around $40 per cwt.

Feeder pig prices are likely to be lower in 1988 than in 1987. The optimism which characterized the market throughout most of 1987 is likely to diminish, as hog prices follow a general downtrend. With lower hog prices and steady to higher feed costs, finishing operations are expected to bid lower for feeder pigs. In addition, the supply of feeder pigs will increase.

Retail Pork Prices Highest on Record In Third Quarter, Decline Likely

Retail pork prices in third quarter 1987 averaged $1.96 a pound, up 4 percent from a year ago, and a quarterly record. Prices are expected to average around $1.85 a pound in the fourth quarter as attention turns to ham. Although there are fewer hams in cold storage, higher hog slaughter will keep supplies above a year ago, moderating prices.

In addition, very large turkey supplies will pressure prices in the fourth quarter and possibly in first-quarter 1988. For all of 1987, retail prices will average near $1.87 a pound.

Table 26--Feeder pig prices consistent with break-even, given corn and market hog prices 1/

Corn 2/	Barrows and gilts, $/cwt					
	35	40	45	50	55	60
$/bu	Feeder pigs, $ per head					
1.50	14	25	36	47	58	69
1.75	12	23	34	45	56	67
2.00	9	20	31	42	53	64
2.25	6	17	28	39	50	61
2.50	3	14	25	36	47	58

1/ Assuming protein and other costs for September 1987. 2/ Price received by farmers.

In 1988, retail prices are expected to average 9 to 11 percent lower than in 1987 as pork and poultry production continues to rise.

The farm-to-retail spread averaged $1.01 in the third quarter, up 10 cents from a year ago, and for 1987 may average 5 to 7 percent above 1986's 96 cents a pound. In 1988, with a 20- to 25-percent drop in hog prices anticipated, the spread may average 1 to 4 percent higher than in 1987.

Pork Imports Up, Hogs Down

Following the placement on August 15, 1985 of a countervailing duty on live swine imports from Canada, and development in Canada of new meat processing facilities, U.S. imports from Canada of live hogs declined

Table 27--Corn Belt hog feeding: Selected costs at current rates 1/

Purchased during: / Marketed during:	Oct.'86 Feb.'87	Nov. Mar.	Dec. Apr.	Jan. May	Feb. June	Mar. July	Apr. Aug.	May Sept.	June Oct.	July Nov.	Aug. Dec.	Sept. Jan.'88
Expenses: ($/head)												
40-50 lb feeder pig	53.23	50.00	47.69	47.00	53.96	54.98	56.00	51.66	45.89	45.60	48.05	47.28
Corn (11 bu)	14.52	15.84	16.28	15.40	14.63	15.62	16.61	18.15	18.48	17.49	15.84	15.95
Protein supplement (130 lb)	17.16	17.16	17.16	17.29	17.29	17.29	17.03	17.03	17.03	18.85	18.85	18.85
Total feed	31.68	33.00	33.44	32.69	31.92	32.91	33.64	35.18	35.51	36.34	34.69	34.80
Labor & management (1.3 hr)	10.61	10.61	10.61	10.61	10.61	10.61	11.13	11.13	11.13	12.19	12.19	12.19
Vet medicine 2/	2.58	2.58	2.58	2.59	2.59	2.59	2.64	2.64	2.64	2.67	2.67	2.67
Interest on purchase (4 months)	2.00	1.88	1.80	1.74	2.00	2.03	2.03	1.88	1.67	1.67	1.76	1.73
Power, equip., fuel, shelter depreciation 2/	6.27	6.27	6.27	6.28	6.28	6.28	6.43	6.43	6.43	6.49	6.49	6.49
Death loss (4% of purchase	2.13	2.00	1.91	1.88	2.16	2.20	2.24	2.07	1.84	1.82	1.92	1.89
Transportation (100 miles)	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48
Marketing expenses	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Miscel. & indirect costs 2/	.64	.64	.64	.64	.64	.64	.66	.66	.66	.66	.66	.66
Total	110.76	108.60	106.56	105.05	111.78	113.86	116.39	113.27	107.39	109.06	110.05	109.33
Selling Price Required To Cover: ($/cwt)												
Feed and feeder costs (220 lb)	38.60	37.73	36.88	36.22	39.04	39.95	40.75	39.47	37.00	37.25	37.61	37.31
All costs (220 lb)	50.35	49.37	48.44	47.75	50.81	51.75	52.90	51.49	48.81	49.57	50.02	49.70
Feed cost per 100-lb gain (180 lb)	17.60	18.33	18.58	18.16	17.73	18.28	18.69	19.54	19.73	20.19	19.27	19.33
Barrows and gilts, 7 markets	48.73	48.22	51.85	55.58	61.08	61.85	60.35	54.72				
Net margin	-1.62	-1.15	3.41	7.83	10.27	10.10	7.45	3.23				
Prices:												
40-lb feeder pig (So. Missouri) $/head	53.23	50.00	47.69	47.00	53.96	54.98	56.00	51.66	45.89	45.60	48.05	47.28
Corn $/bu 3/	1.32	1.44	1.48	1.40	1.33	1.42	1.51	1.65	1.68	1.59	1.44	1.45
Protein supp. (38-42%) $/cwt 4/	13.20	13.20	13.20	13.30	13.30	13.30	13.10	13.10	13.10	14.50	14.50	14.50
Labor & management $/hr 5/	8.16	8.16	8.16	8.16	8.16	8.16	8.56	8.56	8.56	9.38	9.38	9.38
Interest rate (annual)	11.30	11.30	11.30	11.10	11.10	11.10	10.90	10.90	10.90	11.00	11.00	11.00
Transportation rate $/cwt (100 miles) 6/	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22
Marketing expenses $/cwt 7/	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Index of prices paid by farmers (1910-14=100)	1089	1089	1089	1091	1091	1091	1116	1116	1116	1127	1127	1127

1/ Although a majority of hog feeding operations in the Corn Belt are from farrow to finish, relative fattening expenses will be similar. Costs represent only what expenses would be if all selected items were paid for during the period indicated. The feed rations and expense items do not necessarily coincide with the experience of individual feeders. For individual use, adjust expenses and prices for management, production level, and locality of operation. 2/ Adjusted monthly by the index of prices paid by farmers for commodities, services, interest, taxes, and wage rates. 3/ Average price received by farmers in Iowa and Illinois. 4/ Average prices paid by farmers in Iowa and Illinois. 5/ Assumes an owner-operator receiving twice the farm labor rate. 6/ Converted from cents/mile for a 44,000-pound haul. 7/ Yardage plus commission fees at a Midwest terminal market.

Table 28--Pork: Retail, wholesale, and farm values, spreads, and farmers' share

Year	Retail price 1/	Wholesale value 2/	Gross farm value 3/	By-product allowance 4/	Net farm value 5/	Farm-retail spread			Farmers' share 6/
						Total	Wholesale-retail	Farm-wholesale	
	- - - Cents per pound - - -								Percent
1982	175.4	121.8	94.3	6.3	88.0	87.4	53.6	33.8	50
1983	169.8	108.9	81.4	4.9	76.5	93.3	60.9	32.4	45
1984	162.0	110.1	83.3	5.9	77.4	84.6	51.9	32.7	48
1985	162.0	101.1	76.2	4.8	71.4	90.6	60.9	29.7	44
1986	178.4	110.9	87.3	4.9	82.4	96.0	67.5	28.5	46
I	167.7	95.7	73.7	4.4	69.3	98.4	72.0	26.4	41
II	163.7	102.2	81.4	4.3	77.1	86.6	61.5	25.1	47
III	189.4	128.9	104.3	5.7	98.5	90.9	60.5	30.4	52
IV	192.9	116.8	90.0	5.3	84.7	108.2	76.1	32.1	44
1987									
Jan.	188.1	105.4	80.7	5.0	75.7	112.4	82.7	29.7	40
Feb.	185.6	103.8	82.9	5.1	77.8	107.8	81.8	26.0	42
Mar.	181.3	102.2	81.7	4.9	76.8	104.5	79.1	25.4	42
I	185.0	103.8	81.8	5.0	76.8	108.2	81.2	27.0	41
Apr.	178.9	108.4	87.8	5.1	82.7	96.2	70.5	25.7	46
May	183.7	117.0	94.8	5.5	89.3	94.4	66.7	27.7	49
June	187.6	124.3	104.1	5.9	98.2	89.4	63.3	26.1	52
II	183.4	116.6	95.6	5.5	90.1	93.3	66.8	26.5	49
July	193.6	126.2	104.8	6.0	98.8	94.8	67.4	27.4	51
Aug.	196.2	127.0	102.7	5.9	96.8	99.4	69.2	30.2	49
Sept.	196.9	119.8	93.4	5.6	87.8	109.1	77.1	32.0	45
III	195.5	124.3	100.3	5.9	94.4	101.1	71.2	29.9	48

1/ Estimated weighted-average of BLS prices of retail cuts from pork carcass. 2/ Value of wholesale quantity equivalent to 1 lb of retail cuts. A wholesale-carcass equivalent of 1.06 is used. 3/ Market values to producer for 1.7 lb of live animal, equivalent to 1 lb of retail cuts. 4/ Portion of gross farm value attributable to edible and inedible by-products. 5/ Gross farm value minus by-product allowance. 6/ Percent net farm value is of retail price.

while pork imports rose. U.S. live hog imports from Canada, at 290,168 head during January-August 1987, were down 23 percent from the same period last year. At the same time U.S. imports of Canadian pork were up 16 percent at 370 million pounds. Total imports from Canada of pork and hogs on a carcass weight basis increased 10 percent.

Live hog imports from Canada would have declined further in the first half of the year except for the favorable price spread between U.S. and Canadian hog prices. As U.S. hog prices decrease with increasing U.S. production, hog imports should slow further during the latter part of the year. Total hog imports for both 1987 and 1988 are estimated at 350,000 head. The deposit rate for the countervailing duty is presently $Can 4.386 per cwt. Review of the duty has been completed for the period April 1, 1985-March 31, 1986, and after a comment period the final assessment rate should be published at the end of November. At that time the difference between the assessment rate and the deposit rate will either be refunded to or collected from the U.S. importers, and a new duty rate will be established.

Total U.S. pork imports, at 785 million pounds carcass weight equivalent during January-August, were up 10 percent, mainly because of increased imports from Canada and Eastern Europe. Imports from Denmark, the United States' second largest supplier after Canada, were down 5 percent. EC export restitutions for pork have been increased, and are expected to counter the negative effect of the strengthening of the Danish krone against the dollar. Pork imports from Denmark should expand during the last part of 1987. Total U.S. pork imports in 1988 could increase slightly from the 1.2 billion pounds expected this year, however larger U.S. supplies and lower pork prices may dampen the rise.

Pork Exports Rise

U.S. pork exports rose 10 percent to 59 million pounds during January-August 1987. About half of these exports are destined for Japan, up 19 percent over last year. The strength of the yen compared to the dollar has made U.S. pork attractive in the Japanese market. Total U.S. pork exports are likely to reach 100 million pounds in 1987 and are forecast to continue to expand next year.

World Pork Supplies Large

Pork output in the major producing countries reached 56 million tons last year, almost a 50-percent increase from 1975's output. Most of this increase came in China, which accounted for 30 percent of the world's pork last year. Pork is the principal meat consumed in Eastern and Western Europe as well as some areas in Asia. World pork output should decline slightly in 1987, mainly because of a drop in China. Foreign production, excluding China, is likely to increase 2 percent in 1987. Next year, China's output should recover, and along with increased output in the United States and Canada, world pork production could increase 2-3 percent. Not much gain is foreseen in 1988 for the rest of the world, though, as downward pressures on prices from large meat supplies could compel producers to pull back inventories.

Low feed prices and favorable returns have kept inventories and output up in the EC. However, increasing supplies of pork and competing meats are pressuring prices downward, and there may be only a small increase in hog inventories in the EC next year.

Denmark, the largest supplier to non-EC countries, has been having difficulty with exports. The weak dollar-kroner exchange rates have negatively affected US imports of Danish pork. Japan, Denmark's other large market, has been importing larger amounts of pork from Taiwan and the United States.

Taiwan, faced with a serious oversupply of pork, has been able to compete effectively for the Japanese market. Because of Taiwan's low costs of production, processing and transportation they have been able to become Japan's primary source for pork imports.

High feed prices and overabundant pork supplies prompted Chinese pork producers to slaughter large numbers of sows in 1986 and to reduce this year's output. Measures now being taken to reduce feed prices and increase pork prices. China's production is forecast to recover in 1988.

Canadian hog inventories are expected to continue to build next year because of the favorable hog/feed price ratios. Pork output is expected to increase 3 percent this year to 940,000 tons, with most of the increase in the second half. A much larger increase of about 6 percent is forecast for next year.

Cattle

Returns to the beef sector over the next couple of years will increasingly be affected by large supplies of competing meats. Little additional help is likely to come from an economic recovery already near record length. Forage supplies in most areas are more than adequate for the reduced number of cattle and sheep. Although production expenses should remain well below 1985/86, feed and other costs will rise from the 1986/87 lows. Declines in profit margins should hold down the rate of herd rebuilding, particularly on farms where herds were liquidated. Returns will likely remain above cash costs. However, from the perspective of a new entrant, they are not likely to cover the additional capital investment costs of re-entering the beef industry, particularly at today's higher prices for herd replacements.

Forage Supplies

Pasture and range conditions in most areas remain favorable but are declining seasonally. Small grain pastures in winter grazing areas of the High Plains look good for increased carrying capacity this winter. Small grain pastures were planted early, and timely rains should result in good accumulated growth before being slowed by cooler weather. However, dry conditions in the Southeast and Pacific Northwest are hampering planting. Pasture conditions on October 1 were rated 79, 6 points above the 1976-85 average, but 4 points below a year ago. The Pacific States, particularly the Pacific Northwest, remain in a drought condition and parts of the Southeast are getting dry.

New-crop hay production estimates were increased in October to 153.7 million tons,

only 1 percent below the record 1986 crop. Alfalfa hay production was down 3 percent, due largely to a dry summer in the Lake States and the drought in the Pacific States. Other hay production was estimated to be 2 percent above a year ago, and given the good pasture conditions, should provide sufficient forage supplies. Carryover hay stocks on May 1 were record large and provide an even larger base for supplemental feeding in 1987/88. Even so, the farm price of hay averaged $65.10 a ton in October, compared with $56.90 a year ago. Alfalfa hay was up $10, while other hay averaged $4 above a year ago.

Second- and Third-Quarter Aberrations

Aberrations in total meat supplies during the second and third quarters of 1987 added support to beef prices at a time when supplies were declining. Poor weather in late winter-early spring and current fed cattle marketings resulted in a reduced supply of market ready fed cattle at a time when nonfed slaughter already was well below a year earlier. When the expected expansion in pork production did not occur, competition for the lower supply of cattle intensified to fill the void. The result was second-quarter cattle prices averaging $68.60 at Omaha and peaking in the low $70's.

Large feedlot placements in the spring resulted in a larger-than-seasonal increase in fed cattle marketings in the summer quarter. However, reduced pork stocks and lower-than-expected pork production together with reduced nonfed cattle slaughter resulted in Choice steer prices averaging $65.04 this past summer. In late August, imported beef from Australia was discovered to have harmful residues, resulting in about 40 million pounds being retested by Australia for possible pesticide or herbicide contamination. Some of this meat was still being retested in late October. Removal of this meat from the market in late summer helped hold up beef prices as pork production began the long-expected expansion.

Third-Quarter Placements Near Record

Cattle on feed October 1 in the 13 quarterly reporting States were 10 percent above a year ago. Sharply higher placements in August and September resulted in the largest placements since 1978 and the second largest on record. Steer and heifer calves on feed increased 87 and 39 percent, respectively, as the supply of yearling cattle continues to be pulled down. Feeder cattle supplies on October 1, 1987 were likely the lowest since the early 1960's, with total supplies down 5 percent, calves down 2, and yearlings down 22. Steers on feed were 14 percent above a year ago, while heifers were up 2 from both last year and 2 years ago.

Feedlot marketings were 2 percent above a year ago during the summer quarter and the largest for this period since 1972. Cattle feeders indicated intentions to market 3 percent more cattle this fall, however, marketings may rise 4 to 5 percent if good feedlot gains continue. While dropping seasonally, fed cattle marketings will remain above last year's through the fall and likely through first-half 1988. However, nonfed slaughter is expected to remain well below the large 1986-87 Dairy Termination Program levels. In addition, strong feedlot demand for cattle will result in nonfed steer and heifer slaughter dropping from about 2.1 million in 1987 to 1.0 to 1.4 million head in 1988 as more of these cattle are placed on feed. Continued large fed cattle marketings and sharply lower nonfed slaughter already is contributing to near record heavy slaughter weights, even though feedlots remain relatively current. Thus, while total cattle slaughter is declining, heavier weights will help hold up production.

Cattle Weights Are Increasing

Slaughter cattle dressed weights have been increasing steadily since midsummer after falling nearly 20 pounds during the second quarter of 1987. The decline in beef carcass weights resulted from relatively tight total meat supplies and the necessity of packers to bid lighter weight cattle out of the feedlots ahead of schedule to fill orders. Packers' aggressive buying increased slaughter, but only partially offset the tight supply situation since lighter weight cattle added less beef per head than if they had been left on feed a little longer. During the second quarter, steer dressed carcass weights averaged just over 700 pounds, versus 719 pounds in the first quarter. Heifer dressed carcass weights showed a similar decline, moving from 650 to 632 pounds.

Table 29--Federally inspected cattle slaughter

Week ended	Cattle			Steers			Cows								
							Total			Dairy			Dairy/total		
	1985	1986	1987	1985	1986	1987	1985	1986	1987	1985	1986	1987	1985	1986	1987
	- - - - - - Thousands - - - - - -												- - Percent - -		
Jan. 3	553	591	577	247	269	274	129	137	130	50	58	62	39	42	48
10	736	757	741	323	343	349	183	189	148	70	79	66	38	42	45
17	741	755	766	355	343	360	153	176	151	61	72	67	40	41	44
24	679	704	707	327	321	336	140	153	124	52	67	61	37	44	49
31	665	669	673	313	308	332	146	143	128	60	62	64	41	43	50
Feb. 7	672	655	684	313	307	316	133	144	135	58	64	67	44	44	50
14	657	651	621	303	310	303	146	122	119	59	58	59	40	48	50
21	671	638	602	311	289	292	142	126	109	59	59	56	41	47	51
28	679	676	657	323	318	326	131	136	121	60	64	66	46	47	55
Mar. 7	678	637	678	332	297	337	127	130	127	55	62	68	43	48	53
14	675	638	646	311	304	311	136	128	124	60	61	58	44	48	47
21	623	646	625	289	305	300	128	131	111	56	61	55	44	47	49
28	621	641	616	282	295	304	124	135	115	55	64	58	44	47	50
Apr. 4	612	669	652	265	315	328	118	157	121	54	89	57	46	57	47
11	640	716	649	286	354	333	119	148	114	53	97	51	45	65	45
18	659	705	681	322	339	349	126	137	119	53	86	52	42	63	44
25	681	719	639	320	342	330	123	159	117	49	92	48	40	58	41
May 2	684	719	635	344	334	321	115	157	118	48	84	48	42	53	41
9	686	706	630	336	327	309	116	149	116	46	77	46	39	52	40
16	711	731	700	356	339	348	120	156	124	47	74	50	39	47	37
23	689	729	695	335	334	355	130	158	131	49	77	49	38	49	37
30	600	643	612	288	310	309	113	136	107	41	64	43	36	47	40
June 6	662	720	680	328	364	351	125	142	117	44	66	50	35	46	43
13	673	735	669	344	375	340	110	143	115	42	66	49	38	46	43
20	684	691	649	338	327	320	121	140	123	44	65	49	36	46	40
27	685	731	680	328	343	339	130	147	130	47	69	52	36	47	40
July 4	559	612	621	294	289	316	84	123	109	32	59	47	38	48	43
11	707	734	652	335	342	338	131	149	114	50	74	51	38	50	45
18	697	746	682	325	354	339	139	163	128	48	75	53	35	46	41
25	678	732	672	331	346	333	119	151	121	45	71	51	38	47	42
Aug. 1	659	685	676	319	310	339	114	148	123	46	75	56	40	51	46
8	683	723	693	340	339	335	107	141	123	44	71	58	41	50	47
15	705	767	713	327	361	354	128	150	124	49	78	58	38	52	47
22	720	733	692	339	341	336	136	147	129	52	71	63	38	48	49
29	706	718	706	334	333	341	133	146	132	53	74	66	40	51	50
Sept 5	613	619	690	295	291	324	111	116	119	46	55	54	41	47	45
12	726	734	624	332	332	293	136	134	100	54	59	44	40	44	44
19	714	722	727	347	352	337	127	145	122	52	66	53	41	46	43
26	698	678	677	313	337	312	139	143	123	58	63	56	42	44	46
Oct. 3	671	694	684	289	359	324	148	134	116	61	62	53	41	46	46
10	692	686	690	300	342	340	147	137	120	57	64	53	39	47	44
17	674	690	695	293	318		155	150		60	66		39	44	
24	678	688	669	299	322		159	152		61	61		38	40	
31	633	696		274	325		154	165		60	66		39	40	
Nov. 7	666	714		293	335		167	165		65	68		39	41	
14	669	671		285	296		174	168		68	73		39	43	
21	655	692		288	313		166	175		66	70		40	40	
28	550	594		255	281		130	133		50	53		38	40	
Dec. 3	653	685		282	298		171	174		68	74		40	43	
10	680	676		290	302		192	175		75	71		39	41	
19	670	691		297	315		168	170		68	74		40	44	
26	521	512		243	248		115	105		45	46		39	44	

Table 30--Commercial cattle slaughter 1/ and production

Year	Steers and heifers: Fed	Steers and heifers: Nonfed	Steers and heifers: Total	Cows	Bulls and stags	Total 2/	Average dressed weight	Commercial production 2/
	- - - 1,000 head - - -						Pounds	Million pounds
1985:								
I	6,678	208	6,886	1,879	171	8,936	637	5,692
II	6,663	534	7,197	1,630	195	9,022	656	5,923
III	6,887	577	7,464	1,691	197	9,352	659	6,167
IV	5,927	665	6,592	2,191	196	8,979	643	5,775
Year	26,155	1,984	28,139	7,391	759	36,289	2,595	23,557
1986:								
I	6,509	325	6,834	1,885	165	8,884	649	5,769
II	6,702	683	7,385	2,006	181	9,572	653	6,246
III	6,745	740	7,520	1,941	192	9,652	651	6,273
IV	6,104	770	6,874	2,129	177	9,180	645	5,925
Year	26,095	2,518	28,613	7,960	715	37,288	649	24,213
1987:								
I	6,546	404	6,950	1,651	164	8,765	657	5,756
II	6,535	561	7,096	1,603	179	8,878	646	5,737
III	6,903	503	7,406	1,635	181	9,222	657	6,063

1/ Classes estimated. 2/ May not add due to rounding.

Table 31--October 1 feeder cattle supply

Item	1985	1986	1987	1987/86
	1,000 head			Percent change
Calves less than 500 lb 1/				
On farms July 1	33,600	32,200	31,468	-2.3
Slaughter July-Sept.	872	859	688	-19.9
On feed Oct. 1 1/	289	310	535	+72.6
Total	32,439	31,031	30,245	-2.5
Steers & heifers 500 + lb 2/				
On farms July 1	24,200	23,300	22,493	-2.6
Slaughter Jul.-Sept.	7,464	7,520	7,406	-1.5
On feed Oct. 1 1/	8,964	9,326	10,094	+8.2
Total	7,772	6,454	4,993	-22.6
Total supply	40,211	37,485	35,238	-6.0

1/ Estimated U.S. steers and heifers. 2/ Not including heifers for cow replacements.

Table 32--Commercial calf slaughter and production

Year	Slaughter 1/	Average dressed weight	Production 1/
	1,000 head	Pounds	Million pounds
1985:			
I	820	145	119
II	770	156	120
III	872	144	126
IV	923	145	134
Year	3,385	148	499
1986:			
I	873	148	129
II	836	154	129
III	859	150	129
IV	839	145	122
Year	3,408	149	509
1987:			
I	768	147	113
II	657	154	101
III	688	145	100

1/ May not add due to rounding.

Slaughtering lighter weight cattle lowered second quarter production an additional 2 percent, however, the decline in slaughter weights was short-lived. As fed cattle inventories began to increase during the summer quarter, the pressure to bid lighter cattle out of feedlots diminished, and weights once again returned to levels of a year ago.

The return to heavier dressed cattle weights is expected to continue through the remainder of 1987, with weights during the fourth quarter increasing about 8 pounds over a year earlier.

The major factor pushing fourth-quarter carcass weights higher is a significant shift in the mix of cattle being slaughtered. Cow

Table 33--Imports of feeder cattle and calves and hogs from Canada and Mexico

Year and month	Feeder cattle and calves		Hogs
	Canada	Mexico	Canada
	Number		
1985			
Jan.	16,447	59,670	184,294
Feb.	32,962	4,416	142,330
Mar.	64,416	4,767	213,490
Apr.	53,996	4,303	89,183
May	34,615	15,684	124,103
June	21,872	26,073	108,799
July	13,124	21,278	108,481
Aug.	13,343	16,105	65,195
Sept.	13,963	16,884	48,421
Oct.	18,039	4,147	37,371
Nov.	28,747	101,638	38,630
Dec.	26,796	201,513	65,854
Total	338,320	476,478	1,226,151
1986			
Jan.	23,604	142,416	70,480
Feb.	27,346	75,302	47,021
Mar.	24,181	77,763	29,067
Apr.	20,536	54,507	33,260
May	21,734	102,787	25,128
June	18,511	41,353	38,926
July	25,485	53,808	81,333
Aug.	18,084	35,650	51,789
Sept.	16,122	20,333	41,133
Oct.	9,404	11,957	32,937
Nov.	13,938	203,827	21,013
Dec.	8,593	336,228	31,628
Total	227,538	1,155,931	503,715
1987			
Jan.	13,615	108,916	48,558
Feb.	19,154	131,631	20,745
Mar.	21,513	134,011	32,206
Apr.	28,569	92,943	47,763
May	27,497	46,567	31,270
June	35,431	95,977	35,143
July	14,568	28,333	40,183
Aug.	15,347	3,616	34,300

slaughter is expected to fall to around 19 percent of the total, compared with nearly 23 percent during the last quarter of 1986. The percent of cattle slaughtered directly from grass also is expected to decline, as more of these animals end up in feedlots to be slaughtered with a higher finishing grade and weight. Fed cattle will comprise about 76 percent of the slaughter mix in 1988, compared with 74 percent in 1987 and near 70 percent in 1986.

Declines in cow slaughter and grass fed beef will reduce beef production 4 percent in 1988, the same decline expected in 1987. Production may decline only 2 to 3 percent in the first half of 1988, as fed cattle marketings likely will remain above this year through midyear. Second- half production may decline 5 to 6 percent as fed cattle marketings also drop below a year earlier. Poorer returns in first-half 1988 due to high feeder cattle prices in late summer and fall 1987, plus higher feeding costs, will result in lower placements from the further reduced feeder cattle supplies.

Record Meat Supplies To Pressure Prices

Retail beef prices reached $2.49 in June, the highest monthly average price since July 1982. This peak occurred at a time of unexpectedly tight total meat supplies, with beef production down 8 percent for the quarter and nearly 12 percent below May 1986. As beef supplies began to increase during the summer months, retail prices trended lower, averaging $2.45 in August and September. Fourth- quarter retail beef prices could drop an additional 2 to 3 cents, bringing the average for the year to around $2.42.

Larger 1988 pork production as well as a 5-percent increase in poultry production will pressure retail prices for all meats. This situation is expected to offset potential price increases within the cattle sector from further declines in beef supplies. For 1988, Choice retail beef prices should average near $2.44 per pound, only 2 cents above the 1987 average, but well above the $2.31 in 1986. Fed cattle prices will continue to trade in the low to mid-$60's during the remainder of 1987 and into the first quarter of 1988. Modest price strength is expected going into the spring quarter as seasonal declines in slaughter support prices in the mid-to-upper $60 per cwt range. Fed cattle marketings are expected to pick up again during the summer quarter, forcing prices back to the mid-$60's where they likely will remain for the rest of the year.

Prices for feeder cattle and cows are expected to feel less of the impact of larger meat supplies next year because of sharp cutbacks in available numbers. Yearling steers and heifers should continue trading in the low to mid $70's through the first half of 1988. Some seasonal price weakness is expected next summer, with prices shifting to the low $70's before picking up again next fall. Utility cow prices will show less

Table 34--Great Plains custom cattle feeding: Selected costs at current rates 1/

Purchased during: Marketed during:	Oct.'86 Apr.'87	Nov. May	Dec. June	Jan. July	Feb. Aug.	Mar. Sept.	Apr. Oct.	May Nov.	June Dec.	July Jan.	Aug. Feb.	Sept. Mar.
Expenses: ($/head)												
600 lb feeder steer	369.90	376.50	381.48	398.82	421.86	423.36	428.88	417.78	427.14	451.08	464.28	485.40
Transportation to feedlot (300 miles)	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96
Commission	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Feed												
Milo (1500 lb) 2/	50.10	45.75	50.25	46.80	46.05	49.05	52.20	56.25	56.55	55.35	51.15	49.65
Corn (1500 lb) 2/	52.05	55.20	57.15	55.20	52.65	54.90	57.60	63.75	63.30	60.15	55.50	56.40
Cotton seed meal (400 lb)	40.80	40.80	40.80	45.20	45.20	45.20	44.00	44.00	44.00	45.20	45.20	45.20
Alfalfa hay (800 lb)	40.80	40.40	43.60	43.20	45.20	45.20	41.20	42.00	46.00	44.00	42.00	42.80
Total feed cost	183.75	182.15	191.80	190.40	189.10	194.35	195.00	206.00	209.85	204.70	193.85	194.05
Feed handling and management charge	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
Vet medicine	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Interest on feeder and 1/2 feed	21.93	22.21	22.68	23.47	24.53	24.73	26.98	26.69	27.27	28.36	28.76	29.85
Death loss (1% of purchase)	5.55	5.65	5.72	5.98	6.33	6.35	6.43	6.27	6.41	6.77	6.96	7.28
Marketing 3/	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.	F.o.b.
Total	612.09	617.47	632.64	649.63	672.78	679.75	688.25	687.70	701.63	721.87	724.81	747.54
Selling price required to cover: 4/ $/cwt												
Feed and feeder cost (1056 lb)	52.43	52.90	54.29	55.80	57.86	58.50	59.08	59.07	60.32	62.10	62.32	64.34
All costs	57.96	58.47	59.91	61.52	63.71	64.37	65.18	65.06	66.44	68.36	68.64	70.79
Selling price 5/	70.39	71.80	69.96	65.70	65.12	66.46						
Net margin	12.43	13.33	10.05	4.18	1.41	2.09						
Cost per 100 lb Gain:												
Variable cost less interest $/cwt	42.66	42.36	44.30	44.08	43.89	44.94	45.09	47.25	48.05	47.09	44.96	45.07
Feed costs $/cwt	36.75	36.43	38.36	38.08	37.82	38.87	39.00	41.20	41.97	40.94	38.77	38.81
Prices:												
Choice feeder steer 600-700 lb Amarillo	61.65	62.75	63.58	66.47	70.31	70.56	71.48	69.63	71.19	75.18	77.38	80.90
Transportation rate $/cwt/100 miles 6/	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22
Commission fee $/cwt	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
Milo $/cwt	3.19	2.90	3.20	2.97	2.92	3.12	3.33	3.60	3.62	3.54	3.26	3.16
Corn $/cwt	3.32	3.53	3.66	3.53	3.36	3.51	3.69	4.10	4.07	3.86	3.55	3.61
Cottonseed Meal (41%) $/cwt 7/	10.20	10.20	10.20	11.30	11.30	11.30	11.00	11.00	11.00	11.30	11.30	11.30
Alfalfa hay $/ton 8/	72.00	71.00	79.00	78.00	83.00	83.00	73.00	75.00	85.00	80.00	75.00	77.00
Feed handling and management $/ton	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Interest, annual rate 9/	9.50	9.50	9.50	9.50	9.50	9.50	10.25	10.25	10.25	10.25	10.25	10.25

1/ Represents only what expenses would be if all selected items were paid for during the period indicated. The feed ration and expense items do not necessarily coincide with experience of individual feedlots. For individual use, adjust expenses and prices for management, production level, and locality of operation. Steers are assumed to gain 500 lbs in 180 days at 2.8 lbs per day with feed conversion of 8.4 lbs per pound gain. 2/ Texas Panhandle elevator price plus $0.15/cwt handling and transportation to feedlots. 3/ Most cattle sold f.o.b. at the feedlot with 4-percent shrink. 4/ Sale weight 1,056 lbs (1,100 lbs less 4-percent shrink). 5/ Choice slaughter steers, 900-1100 lbs, Texas-New Mexico direct. 6/ Converted from cents per mile for a 44,000-lb haul. 7/ Average prices paid by farmers in Texas. 8/ Average price received by farmers in Texas plus $30/ton handling and transportation to feedlots. 9/ Prime sate plus 2 points.

volatility, continuing in the mid $40's per cwt. through much of 1988.

Beef Imports Rising

U.S. imports of beef reached 1,638 million pounds, carcass weight, during January-August 1987, up 15 percent over the same period last year. The major suppliers, Australia and New Zealand, were up 17 and 47 percent respectively, to 713 and 508 million pounds. Imports from Canada were down 20 percent to 118 million pounds. Total U.S. beef and veal imports for 1987 are likely to be up 5 percent to 2,270 million pounds and further gains are expected next year.

Argentina and Brazil, because of hoof and mouth disease, can only provide cooked beef,

Table 35--Corn Belt cattle feeding: Selected costs at current rates 1/

Purchased during: Marketed during:	Oct.'86 Apr.'87	Nov. May	Dec. June	Jan. July	Feb. Aug.	Mar. Sept.	Apr. Oct.	May Nov.	June Dec.	July Jan.	Aug. Feb.	Sept. Mar.
Expenses: ($/head)												
600 lb feeder steer	390.60	384.78	390.00	414.00	428.28	426.78	437.40	440.28	444.00	457.20	476.28	489.00
Transportation to feedlot-400 miles	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28
Corn (45 bu)	59.40	64.80	66.60	63.00	59.85	63.90	67.95	74.25	75.60	71.55	64.80	65.25
Silage (1.7 tons)	22.44	24.72	25.34	25.08	24.91	25.53	26.44	27.63	28.48	26.84	25.09	25.65
Protein supplement (270 lb)	32.94	32.94	32.94	32.67	32.67	32.67	31.32	31.32	31.32	33.21	33.21	33.21
Hay (400 lb)	8.00	8.90	9.10	9.40	9.70	9.60	9.70	9.70	10.00	9.50	9.40	9.50
Total feed costs	122.78	131.36	133.98	130.15	127.13	131.70	135.41	142.90	145.40	141.10	132.50	133.61
Labor (4 hours)	15.72	15.72	15.72	15.72	15.72	15.72	15.72	15.72	15.72	15.72	15.72	15.72
Management (1 hr.) 2/	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86
Vet Medicine 3/	5.12	5.12	5.12	5.13	5.13	5.13	5.25	5.25	5.25	5.30	5.30	5.30
Interest on purchase (6 months)	22.07	21.74	22.04	22.98	23.77	23.69	23.84	24.00	24.20	25.15	26.20	26.90
Power, equip., fuel, shelter, deprec. 3/	23.87	23.87	23.87	23.91	23.91	23.91	24.46	24.46	24.46	24.70	24.70	24.70
Death loss (1% of purchase)	3.91	3.85	3.90	4.14	4.28	4.27	4.37	4.40	4.44	4.57	4.76	4.89
Transportation (100 miles)	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31
Marketing expenses	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
Miscellaneous and indirect costs 3/	10.32	10.32	10.32	10.34	10.34	10.34	10.58	10.58	10.58	10.68	10.68	10.68
Total	613.19	615.56	623.75	645.18	657.36	660.34	675.83	686.39	692.85	703.22	714.94	729.60
Selling price required to cover: ($/cwt)												
Feed and feeder costs (1050 lb)	48.89	49.16	49.90	51.82	52.90	53.19	54.55	55.54	56.13	56.98	57.98	59.30
All costs (1050 lb)	58.40	58.63	59.40	61.45	62.61	62.89	64.36	65.37	65.99	66.97	68.09	69.49
Feed cost per 100 lb gain (450 lb)	27.28	29.19	29.77	28.92	28.25	29.27	30.09	31.76	32.31	31.36	29.44	29.69
Choice steers, Omaha (900-1100 lb)	66.30	70.66	68.83	65.80	64.50	64.81						
Net margin	7.90	12.03	9.43	4.35	1.89	1.92						
Prices:												
Feeder steer, Choice (600-700 lb) $/cwt												
Kansas City $/cwt	65.10	64.13	65.00	69.00	71.38	71.13	72.90	73.38	74.00	76.20	79.38	81.50
Corn $/bu 4/	1.32	1.44	1.48	1.40	1.33	1.42	1.51	1.65	1.68	1.59	1.44	1.45
Hay $/ton 4/	40.00	44.50	45.50	47.00	48.50	48.00	48.50	48.50	50.00	47.50	47.00	47.50
Corn silage $/ton 5/	13.20	14.54	14.91	14.76	14.65	15.02	15.55	16.25	16.75	15.79	14.76	15.09
Protein supplement (32-36%) $/cwt	12.20	12.20	12.20	12.10	12.10	12.10	11.60	11.60	11.60	12.30	12.30	12.30
Farm labor $/hour	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Interest rate, annual	11.30	11.30	11.30	11.10	11.10	11.10	10.90	10.90	10.90	11.00	11.00	11.00
Transportation rate 7/ $/cwt. per 100 miles	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22
Mktg. expenses $/cwt 8/	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
Index of prices paid by farmers (1910-14=100)	1089	1089	1089	1091	1091	1091	1116	1116	1116	1127	1127	1127

1/ Represents only what expenses would be if all selected items were paid for during the period indicated. The feed ration and expense items do not necessarily coincide with experience of individuals for management, production level, and locality of operation. 2/ Assumes 1 hour at twice the labor rate. 3/ Adjusted monthly by the index of prices paid by farmers for commodities, services, interest, taxes, and wage rates. 4/ Average price received by farmers in Iowa and Illinois. 5/ Corn silage price derived from an equivalent price of 5 bushels corn and 330 lb hay. 6/ Average price paid by farmers in Iowa and Illinois. 7/ Converted from cents/mile for a 44,000-pound haul. 8/ Yardage plus commission fees at a Midwest terminal market.

Table 36--13-States cattle on feed, placements, marketings, and other disappearance

Year	Cattle on feed 1/	Change previous year	Placed on feed	Change previous year	Fed cattle marketed	Change previous year	Other disappear-ance	Change previous year
	1,000 head	Percent	1,000 head	Percent	1,000 head	Percent	1,000 head	Percent
1984:								
I	9,908	-3.5	5,511	+9.6	5,714	+0.4	365	-19.1
II	9,340	+2.0	5,562	-5.7	5,620	+1.7	582	+29.3
III	8,700	-4.1	6,252	12.0	5,684	-3.5	268	-10.1
IV	9,000	6.3	7,592	3.9	5,507	1.3	417	6.1
Year	---	---	24,884	4.5	22,525	-0.1	1,632	2.5
1985:								
I	10,653	7.3	5,315	-3.4	5,907	3.4	373	2.2
II	9,688	3.7	5,206	-6.5	5,787	3.0	437	-24.9
III	8,670	-.3	5,480	-12.3	5,969	5.0	244	-9.0
IV	7,937	-11.8	7,365	-3.0	5,224	-5.1	324	-22.3
Year	---	---	23,366	-6.1	22,887	1.6	1,378	-15.6
1986:								
I	9,754	-8.4	5,270	-.8	5,763	-2.4	316	-15.3
II	8,945	-7.7	5,221	-.3	5,821	-.6	375	-14.2
III	7,970	-8.1	6,336	15.6	5,876	-1.6	233	-4.5
IV	8,197	3.3	6,726	-8.7	5,376	2.9	312	-3.7
Year	---	---	23,553	.1	22,836	-.2	1,236	-10.3
1987:								
I	9,235	-5.3	5,700	8.2	5,767	.1	371	17.4
II	8,797	-1.7	5,961	14.2	5,669	-2.6	423	12.8
III	8,666	-8.7	6,557	3.5	5,986	+1.9	245	5.2
IV	8,992	+9.7						

1/ Beginning of quarter. 2/ Expected marketings.

Table 37--7-States cattle on feed, placements, and marketings

Year	On feed	Change from previous year	Net placements	Change from previous year	Marketings	Change from previous year	Other disappear-ance	Change from previous year
	1,000 head	Percent	1,000 head	Percent	1,000 head	Percent	1,000 head	Percent
1986								
Jan.	7,920	-8.3	1,494	+12.2	1,750	-1.8	87	-26.3
Feb.	7,664	-6.4	1,128	-9.5	1,470	-4.5	92	-2.1
Mar.	7,322	-7.2	1,564	+4.7	1,593	+2.2	86	-12.2
Apr.	7,293	-6.8	1,445	+12.6	1,631	+1.7	120	-9.8
May	7,107	-5.3	1,624	+4.9	1,635	+1.9	132	+3.1
June	7,096	-4.8	1,095	-7.5	1,648	+4.5	67	-23.0
July	6,543	-7.3	1,480	+45.5	1,692	+1.3	64	+4.9
Aug.	6,331	-1.1	1,732	+19.6	1,659	-2.2	70	+12.9
Sept.	6,404	+4.0	2,044	+7.1	1,637	+2.1	59	-25.3
Oct.	6,811	+5.4	2,322	-13.8	1,587	+.9	81	-4.7
Nov.	7,546	-.5	1,727	+2.2	1,447	+4.9	87	+14.5
Dec.	7,826	-.8	1,301	-9.0	1,494	+6.6	104	-6.3
1987								
Jan.	7,633	-3.6	1,464	-2.0	1,803	+3.0	127	+46.0
Feb.	7,294	-4.8	1,322	+17.2	1,473	+.2	105	+14.1
Mar.	7,143	-2.4	1,665	+6.5	1,586	-.4	89	+3.5
Apr.	7,222	-1.0	1,592	+10.2	1,581	-3.1	134	+11.7
May	7,233	+1.8	1,811	+11.5	1,524	-6.8	143	+8.3
June	7,520	+6.0	1,375	+25.6	1,702	+3.3	87	+29.9
July	7,193	+9.9	1,190	-19.6	1,694	+.1	74	+15.6
Aug.	6,689	+5.7	1,829	+5.6	1,700	+2.5	68	-2.9
Sept.	6,818	+6.5	2,353	+15.1	1,636	-.1	71	+20.3
Oct.	7,535	+10.6						

which is not included under the Meat Import Law. Imports from Argentina were up 28 percent to 135 million lbs. during the first 8 months but Brazil was down 23 percent to 52 million lbs.

Meat imports subject to the Meat Import Law are fresh, chilled, or frozen beef, veal, mutton, and goat meat and certain prepared items. The trigger level for 1987 is 1,440 million pounds product weight. Meat imports subject to the Meat Import Law were up 16 percent to 1,086 million pounds in January–August 1987 according to Department of Commerce import statistics. The fourth quarterly estimate of 1987 U.S. imports under the Meat Import Law was set at 1,439 million pounds, based on verbal agreements with Australia and New Zealand to sign voluntary restraint agreements to limit their exports for the remainder of 1987. This means that because the fourth quarterly estimate is below 1,440 million pounds the meat import quotas mandated by the Meat Import Law will not be triggered. The trigger level and first quarterly estimate for 1988 will be announced by the Secretary of Agriculture at the end of the year.

U.S. Beef Exports Up To Japan And Brazil

U.S. beef exports during January- August 1987 were up 37 percent to 366 million pounds. The largest market, Japan, with 233 million pounds was up 9 percent. The continued strength of the yen and the recent increase in Japan's import commitment are responsible for the increase. Japan increased its global quota for beef imports for the Japanese fiscal year (April 1987-March 1988) to 214,000 tons. This is 37,000 tons (or 20 percent) above the commitment agreed to under the 1984 Beef–Citrus Understanding. Historically about 30 percent of the total quota has been U.S. high quality beef. But, because of the shortage in Japan of highly priced wage beef, it is estimated that the U.S. share of this increase could be as much as 45 percent.

Another major reason for the increase has been meat exports mandated under the Food Security Act of 1985 to lessen the effects on domestic producers of the Dairy Termination Program. Last year 90,000 tons of beef were sold to Brazil, and additional smaller sales have been made to Venezuela and Mexico. About 100 million pounds were shipped to Brazil during 1986, and in the first 8 months of 198, 56 million pounds have been sent.

Total U.S. exports of beef and veal are expected to be up 21 percent to to 636 million pounds in 1987. Although exports to Japan are forecast to continue increasing next year, with the completion of the shipments mandated under the Food Security Act, total U.S. beef exports for 1988 will likely decline. However, the expected export level will still show a sharp increase over 1984 exports.

Increased Foreign Beef Output Projected

Beef and veal output in the major producing countries is expected to reach 44 million metric tons in 1987, a marginal decrease over last year. Output in 1988 is also forecast to decrease slightly. Most of this decline is because of the forecasted drop in U.S. production as foreign output for both years is projected to increase by 1 percent. The United States accounts for about a quarter of the total beef and veal output and is the largest producer and importer. Other major producers include the USSR, the EC, Argentina, Brazil, and Oceania.

During 1986, Brazilian beef producers held supplies off the market in retaliation for the Government's freezing of beef prices at a level producers felt was too low. Demand for meat was increasing because consumer real income was rising. Therefore, as a countermove, the Brazilian Government contracted for beef imports mainly from the EC, United States, and Uruguay. During 1986, Brazil, ordinarily a major beef exporter, imported about 430,000 metric tons. Because of the increased imports and despite falling production and exports, beef consumption rose. This year, however, beef prices have been allowed to rise while salaries are frozen and consumer purchasing power is declining. Thus, although production is up, consumption is likely to be down in 1987 because of reduced imports. Brazil has restricted exports to offset reduced supplies and avoid domestic price speculation. Next year, production, exports, and consumption are all expected to rise as economic conditions improve.

Beef output in the EC will continue to increase in 1987. Dairy cow slaughter

continues high as large dairy surpluses have forced another reduction in the dairy quota. As cattle inventories decline, beef output next year is forecast to drop 3 percent.

Australian beef output was up in 1986 and at the beginning of 1987 because lack of rain in some areas had forced higher slaughter, including some liquidation of breeding stock. With a return to more typical weather and with the good prospects on export markets, Australian producers are attempting to rebuild herds. As a result, beef output for this year is forecast to be down from 1986 but slightly higher slaughter is expected in 1988.

Sheep and Lambs

Sheep and lamb producers continue to show positive returns in 1987. Costs of production estimates for total cash costs per hundredweight of lambs sold were in the low- to-mid $60's for 1986. Sheep producers should have positive returns again in 1987. Slaughter lamb prices averaged about in the high $70's for the year and feed costs remained basically unchanged. Producers also received payments for cull ewes, wool, and ASCS wool price support payments.

Costs of production estimates indicate that sheep producers have had a positive return above total cash expenses since 1984. Producers' reactions have shown up as a stabilizing of the stock sheep numbers during 1987 and a 24-percent year-over-year increase in ewe lambs kept for the breeding herd as of January 1, 1987. Positive returns to sheep producers have also shown in a 9-percent year-over-year decline in cumulative mature sheep slaughter through September, from an unchanged base. This is a further indication that the sheep industry is expanding and that stock sheep numbers and ewe lamb numbers should be up on January 1, 1988, with production increases for 1988.

Commercial lamb and mutton production in 1987 is down 8 percent on a cumulative basis through September as compared to the same period in 1986. September 1987 sheep and lamb production was 28 million pounds, down 7 percent from the 30 million pounds of September 1986. This brought third quarter 1987 production in at 77 million pounds, down 5 percent from third-quarter 1986. Fourth-quarter lamb and mutton production is expected to be down 2 to 3 percent at 80 million pounds. Second-half lamb and mutton production should be down around 4 percent in 1987, compared to the 10 percent year-over-year decline in the first half.

Table 38--Commercial sheep and lamb slaughter 1/ and production

Year	Lambs and yearlings	Mature sheep	Total 2/	Average dressed weight	Commercial production 2/
	- - 1,000 head - -			Pounds	Mil lb
1985:					
I	1,539	90	1,629	57	93
II	1,363	118	1,481	56	83
III	1,403	114	1,417	56	85
IV	1,460	92	1,551	59	91
Year	5,765	414	6,078	228	352
1986:					
I	1,438	72	1,510	60	90
II	1,246	97	1,344	58	78
III	1,324	80	1,404	58	81
IV	1,306	72	1,378	60	82
Year	3,514	321	5,635	59	331
1987:					
I	1,213	57	1,270	60	76
II	1,211	79	1,290	58	75
III	1,241	74	1,315	58	76

1/ Classes estimated. 2/ May not add due to rounding.

Production of lamb and mutton is expected to increase to around 330 million pounds in 1988. First-quarter production should be about 85 million pounds in 1988. This large increase is due in part to the spring religious holidays falling in early April in 1988, as compared to late April in 1987. Second-quarter 1988 production should increase about 6 to 7 percent over 1987, to about 80 million pounds.

Slaughter lamb prices at San Angelo have been dropping steadily since the May 1987 peak of $94.50 per hundredweight to an average of about $70 in September, with third-quarter prices averaging about $72.90. This is a normal seasonal pattern in sheep prices, but the decline may be greater this year because of the larger spring price runup. In the three weeks of October lamb slaughter prices in San Angelo were around $66. Since October and November are typically the lowest months for slaughter lamb prices, the fourth-quarter price is expected to average

$69 to $73. Slaughter lamb prices at San Angelo are expected to average $74 to $80 in the first quarter of 1988, and $75 to $81 in the second quarter. Prices are expected to be stronger relative to a year ago in the first quarter of 1988 as compared to the second quarter as the spring religious holidays occur earlier in the year. For the year, 1988 slaughter lamb prices should average $70 to $76, as compared to $78 to $79 in 1987.

Table 39--Beef, Choice Yield Grade 3: Retail, carcass, and farm values, spreads, and farmers' share

Year	Retail price 1/	Gross carcass value 2/	Carcass by-product allowance 3/	Net carcass value 4/	Gross farm value 5/	Farm by-product allowance 6/	Net farm value 7/	Farm-retail spread			Farmers' share 8/
								Total	Carcass-retail	Farm-carcass	
	- - - Cents per pound - - -										Percent
1982	242.5	152.8	2.1	150.7	155.5	15.0	140.5	102.0	91.8	10.2	58
1983	238.1	147.4	2.0	145.4	151.8	15.6	136.2	101.9	92.7	9.2	57
1984	239.6	150.6	3.0	147.6	158.6	18.6	140.0	99.6	92.0	7.6	58
1985	232.6	137.0	1.8	135.2	142.2	15.4	126.8	105.8	97.4	8.4	55
1986	230.7	134.3	1.2	133.1	140.0	15.6	124.4	106.3	97.6	8.7	54
I	233.2	133.5	1.3	132.2	138.6	15.5	123.1	110.1	101.0	9.1	53
II	226.8	127.8	.9	126.9	131.7	15.1	116.6	110.2	99.9	10.3	51
III	229.5	136.1	1.2	134.9	142.9	15.5	127.5	102.2	94.6	7.6	56
IV	233.3	139.7	1.3	138.4	146.8	16.4	130.4	102.9	94.9	8.0	56
1987											
Jan.	236.6	135.5	1.5	134.0	142.8	17.1	125.7	110.9	102.6	8.3	53
Feb.	233.6	138.9	1.4	137.5	149.5	17.8	131.7	101.9	96.1	5.8	56
Mar.	233.6	140.7	1.2	139.5	151.4	18.0	133.4	100.2	94.1	6.1	57
I	234.6	138.4	1.4	137.0	147.9	17.6	130.3	104.3	97.6	6.7	56
Apr.	236.8	152.2	1.3	150.9	163.4	19.7	143.7	93.1	85.9	7.2	61
May	243.4	161.4	1.5	159.9	171.4	20.5	150.9	91.5	83.5	9.0	62
June	249.4	159.1	1.5	157.6	168.7	20.0	148.7	100.7	91.8	8.9	60
II	243.2	157.6	1.5	156.1	167.8	20.0	147.8	95.4	87.1	8.3	61
Jul.	248.2	150.2	1.4	148.8	159.0	19.9	139.1	109.1	99.4	9.7	56
Aug.	245.4	144.0	1.4	142.6	156.5	20.2	136.3	109.1	102.8	6.3	56
Sept.	245.5	146.4	1.5	144.9	158.0	20.4	137.6	107.9	100.6	7.3	56
III	246.4	146.9	1.4	145.5	157.8	20.1	137.7	108.7	100.9	7.8	56

1/ Estimated weighted-average of BLS prices of retail cuts from Choice Yield Grade 3 carcass. 2/ Value of carcass-quantity equivalent to 1 lb of retail cuts. A wholesale-carcass equivalent of 1.476 is used. 3/ Portion of gross carcass value attributed to fat and bone trim. 4/ Gross carcass value minus carcass by-product allowance. 5/ Market value to producer for 2.4 lb of live animal, equivalent to 1 lb of retail cuts. 6/ Portion of gross farm value attributed to edible and inedible by-products. 7/ Gross farm value minus farm by-product allowance. 8/ Percent net farm value is of retail price.

Table 40--Average retail price per pound of specified meat cuts

Year and item	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
						Dollars						
Choice Beef:												
Ground chuck												
1986	1.66	1.66	1.66	1.63	1.59	1.60	1.61	1.62	1.64	1.65	1.66	1.65
1987	1.69	1.65	1.68	1.70	1.70	1.71	1.71	1.72	1.72			
Ground beef												
1986	1.28	1.26	1.27	1.22	1.19	1.16	1.19	1.22	1.23	1.23	1.28	1.26
1987	1.30	1.27	1.28	1.29	1.32	1.30	1.31	1.32	1.32			
Chuck roast, bone in												
1986	1.68	1.64	1.65	1.53	1.54	1.53	1.50	1.54	1.50	1.58	1.66	1.68
1987	1.68	1.64	1.63	1.70	1.65	1.71	1.70	1.66	1.67			
Round roast, boneless												
1986	2.55	2.47	2.46	2.41	2.44	2.33	2.39	2.40	2.46	2.49	2.47	2.47
1987	2.54	2.47	2.49	2.45	2.59	2.56	2.50	2.51	2.57			
Rib roast, bone in												
1986	3.36	3.33	3.20	3.29	3.16	3.21	3.19	3.29	3.28	3.18	3.31	3.39
1987	3.44	3.44	3.37	3.29	3.48	3.64	3.69	3.67	3.60			
Round steak, boneless												
1986	2.91	2.82	2.82	2.75	2.74	2.74	2.66	2.69	2.76	2.79	2.75	2.80
1987	2.80	2.80	2.76	2.81	2.94	2.96	2.91	2.93	2.92			
Sirloin steak, bone in												
1986	2.90	2.97	2.84	2.90	2.99	3.01	3.07	3.01	3.01	2.94	2.91	2.93
1987	2.81	2.96	2.87	3.02	3.22	3.44	3.36	3.23	3.26			
Chuck steak, bone in												
1986	1.72	1.58	1.62	1.52	1.48	1.50	1.47	1.60	1.55	1.62	1.69	1.69
1987	1.71	1.65	1.64	1.69	1.59	1.62	1.62	1.61	1.61			
T-Bone steak, bone in												
1986	3.99	3.91	3.87	3.90	3.96	3.99	4.06	4.11	4.09	3.85	3.92	3.97
1987	3.86	3.79	3.83	4.01	4.33	4.64	4.77	4.45	4.37			
Porterhouse steak, bone in												
1986	4.08	3.96	3.92	3.96	4.16	4.22	4.29	4.29	4.28	4.26	4.29	4.17
1987	4.22	4.19	4.22	4.26	4.36	4.44	4.44	4.42	4.39			
Pork:												
Bacon, sliced												
1986	1.94	1.96	1.89	1.87	1.87	1.95	2.16	2.33	2.37	2.30	2.19	2.16
1987	2.12	2.09	2.10	2.08	2.11	2.13	2.23	2.28	2.28			
Chops, center cut												
1986	2.47	2.42	2.38	2.36	2.40	2.48	2.76	2.81	2.82	2.74	2.72	2.75
1987	2.72	2.70	2.64	2.74	2.78	2.97	3.01	3.00	2.98			
Ham, rump or shank half												
1986	1.38	1.42	1.38	1.30	1.32	1.33	1.46	1.52	1.58	1.66	1.68	1.63
1987	1.60	1.59	1.50	1.36	1.44	1.50	1.52	1.56	1.58			
Sirloin roast, bone in												
1986	1.66	1.65	1.65	1.64	1.65	1.67	1.90	1.89	1.89	1.89	1.87	1.91
1987	1.90	1.82	1.81	1.89	1.92	1.95	2.02	2.04	2.05			
Shoulder picnic, bone in												
1986	1.06	1.03	1.00	1.00	.96	.99	1.01	1.12	1.14	1.18	1.18	1.18
1987	1.15	1.10	1.06	1.03	1.08	1.03	1.11	1.14	1.16			
Sausage, fresh, pork, loose												
1986	1.84	1.79	1.86	1.78	1.77	1.76	1.85	1.94	2.05	2.10	2.07	2.05
1987	2.01	2.02	1.99	1.97	1.98	1.94	2.00	2.02	2.01			
Miscellaneous cuts:												
Ham, canned, 3 or 5 lb												
1986	2.56	2.68	2.58	2.57	2.55	2.57	2.58	2.64	2.70	2.82	2.94	2.92
1987	2.84	2.85	2.83	2.77	2.74	2.76	2.83	2.84	2.83			
Frankfurters, all meat												
1986	1.91	1.92	1.88	1.85	1.87	1.89	1.91	1.96	2.00	1.99	1.98	2.02
1987	1.98	1.99	1.96	1.98	1.96	2.00	1.91	2.01	1.98			
Bologna												
1986	2.14	2.09	2.12	2.12	2.10	2.11	2.15	2.19	2.23	2.25	2.27	2.27
1987	2.22	2.17	2.19	2.15	2.14	2.15	2.21	2.21	2.21			
Beef liver												
1986	.99	.96	.95	.97	.96	.97	.98	.94	.95	.98	1.01	1.01
1987	1.02	1.00	1.03	1.02	1.04	1.03	1.03	1.03	1.03			

Table 41--Total red meat supply and utilization, carcass and retail weight 1/

Year	Production Commercial	Production Farm	Beginning stocks	Imports	Total supply	Exports	Shipments	Military	Ending stocks	Total disappearance	Per capita Carcass weight	Per capita Retail weight
	Million pounds										Pounds	
Beef												
1986												
I	5,769	55	317	502	6,643	102	13	24	297	6,207	26.0	19.0
II	6,246	24	297	482	7,049	83	12	33	322	6,600	27.6	20.1
III	6,273	24	322	640	7,259	144	14	30	292	6,779	28.3	20.7
IV	5,925	55	292	505	6,777	193	13	23	311	6,237	26.0	19.0
Year	24,213	158	317	2,129	26,817	521	52	110	311	25,823	107.9	78.8
1987												
I	5,756	55	311	543	6,665	127	14	32	293	6,200	25.7	18.8
II	5,737	24	293	627	6,681	136	13	23	237	6,273	26.0	19.0
Year 2/	23,330	158	311	2,250	26,049	630	57	104	300	24,958	103.3	76.4
1988												
Year 2/	22,350	158	300	2,275	25,083	500	60	110	325	24,088	98.9	73.1
Pork												
1986												
I	3,570	23	229	279	4,101	16	33	16	254	3,782	15.9	15.0
II	3,568	10	254	247	4,079	28	30	21	248	3,751	15.7	14.8
III	3,237	10	248	282	3,776	15	28	20	186	3,528	14.7	13.9
IV	3,623	23	186	314	4,146	27	41	17	197	3,863	16.1	15.2
Year	13,998	65	229	1,122	15,414	86	132	74	197	14,925	62.4	58.8
1987												
I	3,540	23	197	290	4,049	19	31	22	221	3,757	15.6	14.8
II	3,325	10	221	296	3,852	27	28	13	189	3,595	14.9	14.1
Year 2/	14,149	65	197	1,200	15,611	100	129	75	220	15,087	62.4	58.7
1988												
Year 2/	15,650	65	220	1,225	17,160	120	140	80	275	16,545	67.8	63.7
Lamb and mutton												
1986												
I	90	2	13	10	116	1	1	0	12	102	0.4	0.4
II	78	1	12	11	102	0	0	0	14	87	0.4	0.3
III	81	1	14	8	104	1	1	0	14	89	0.4	0.3
IV	82	2	14	12	110	0	0	0	12	98	0.4	0.4
Year	331	7	13	41	392	2	2	0	12	376	1.6	1.4
1987												
I	76	2	12	13	104	0	1	0	14	89	0.4	0.3
II	75	1	14	12	102	0	1	0	11	89	0.4	0.3
Year 2/	308	7	12	45	372	1	2	0	8	361	1.5	1.3
1988												
Year 2/	330	7	8	50	395	2	1	0	9	383	1.6	1.4
Veal												
1986												
I	129	5	11	7	153	1	0	1	10	140	0.6	0.5
II	129	2	10	4	145	1	0	2	9	133	0.6	0.5
III	129	2	9	4	144	2	0	2	7	134	0.6	0.5
IV	122	5	7	12	146	1	0	1	7	136	0.6	0.5
Year	509	15	11	27	562	5	1	6	7	544	2.3	1.9
1987												
I	113	5	7	6	131	2	0	2	6	122	0.5	0.4
II	101	2	6	4	113	2	0	1	4	106	0.4	0.4
Year 2/	425	15	7	20	467	6	1	7	7	446	1.8	1.5
1988												
Year 2/	400	15	7	25	447	5	1	7	7	427	1.8	1.5
Total Red Meat:												
1986												
I	9,558	85	570	799	11,012	119	47	41	573	10,232	42.9	34.8
II	10,021	37	573	743	11,374	112	42	56	593	10,571	44.2	35.7
III	9,720	37	593	934	11,284	160	43	51	499	10,530	43.9	35.3
IV	9,752	85	499	843	11,180	222	55	42	527	10,334	43.0	35.0
Year	39,051	245	570	3,319	43,185	613	187	190	527	41,668	174.1	140.8
1987												
I	9,485	85	528	851	10,950	148	45	56	534	10,167	42.2	34.3
II	9,238	37	534	939	10,748	165	42	37	441	10,063	41.7	33.7
Year 2/	38,212	245	527	3,515	42,499	737	189	186	535	40,852	169.0	138.0
1988												
Year 2/	38,730	245	535	3,575	43,085	627	202	197	616	41,443	170.0	140.0

1/ Totals may not add because of rounding. 2/ Forecast.

Table 42--Poultry supply and utilization 1/

Year	Total Slaughter	Beginning stocks	Total supply	Exports	Shipments	Military	Ending stocks	Total disappearance	Per capita Retail weight
				Million pounds					Pounds
Young Chicken									
1986									
I	3,419	27	3,446	121	36	7	24	3,258	13.7
II	3,687	24	3,711	135	34	11	23	3,508	14.7
III	3,635	23	3,658	132	42	10	25	3,450	14.4
IV	3,575	25	3,600	178	38	7	24	3,353	14.0
Year	14,316	27	14,342	566	149	35	24	13,568	56.7
1987									
I	3,750	24	3,774	141	39	8	25	3,560	14.8
II	3,926	25	3,951	198	32	7	24	3,690	15.3
Year 2/	15,504	24	15,528	776	141	33	25	14,552	60.2
1988									
Year 2/	16,282	25	16,307	650	140	36	25	15,456	63.4
Other chicken									
1986									
I	162	144	306	3	1	0	161	141	0.6
II	173	161	334	4	1	1	157	172	0.7
III	148	157	305	4	1	1	147	152	0.6
IV	146	147	293	5	1	0	163	124	0.5
Year	629	144	773	16	3	2	163	589	2.5
1987									
I	157	163	320	6	1	1	172	141	0.6
II	185	172	357	6	1	1	182	169	0.7
Year 2/	651	163	814	20	3	2	130	658	2.7
1988									
Year 2/	652	130	782	20	4	1	135	622	2.6
Total chicken									
1986									
I	3,581	171	3,752	124	37	8	184	3,399	14.3
II	3,860	184	4,045	139	35	12	180	3,679	15.4
III	3,783	180	3,963	136	42	10	172	3,602	15.0
IV	3,721	172	3,893	183	38	8	187	3,477	14.8
Year	14,945	171	15,116	582	152	37	187	14,158	59.1
1987									
I	3,908	187	4,095	147	40	9	197	3,702	15.4
II	4,111	197	4,309	204	32	8	206	3,859	16.0
Year 2/	16,155	187	16,342	796	144	35	155	15,210	62.9
1988									
Year 2/	16,934	155	17,089	670	144	37	160	16,078	66.0
Turkey									
1986									
I	581	150	731	5	0	2	151	574	2.4
II	750	151	901	5	0	2	298	596	2.5
III	982	298	1,280	7	1	5	512	755	3.2
IV	958	512	1,470	10	3	2	178	1,277	5.3
Year	3,271	150	3,422	27	4	10	178	3,230	13.4
1987									
I	692	178	871	6	0	2	227	636	2.6
II	900	227	1,126	7	0	3	381	735	3.0
Year 2/	3,827	178	4,005	30	2	15	300	3,657	15.1
1988									
Year 2/	4,072	300	4,372	30	4	16	200	4,122	16.9
Total poultry									
1986									
I	4,162	321	4,483	129	37	9	335	3,973	16.7
II	4,610	335	4,945	144	35	13	478	4,275	17.9
III	4,765	478	5,243	143	43	15	684	4,357	18.2
IV	4,679	684	5,363	193	41	9	365	4,754	19.8
Year	18,216	321	18,537	609	156	47	365	17,359	72.5
1987									
I	4,600	365	4,965	153	40	10	424	4,338	18.0
II	5,011	424	5,435	211	32	10	587	4,594	19.0
Year 2/	19,982	365	20,347	827	147	51	455	18,868	78.1
1988									
Year 2/	21,007	455	21,462	700	148	53	360	20,201	82.8

1/ Totals may not add because of rounding. 2/ Forecast.

Table 43--Total red meat and poultry supply and utilization, retail weight 1/

Year	Total Production	Beginning stocks	Imports	Total supply	Exports	Shipments	Military	Ending stocks	Total disappearance	Per capita Retail weight
				Million pounds						Pounds
1986										
I	13,839	891	799	15,495	248	84	50	908	14,205	51.5
II	14,697	908	743	16,320	256	77	70	1,071	14,846	53.6
III	14,550	1,071	934	16,527	304	86	67	1,183	14,888	53.5
IV	14,546	1,183	843	16,542	415	96	51	892	15,116	54.9
Year /2	57,512	891	3,319	61,722	1,223	343	235	892	59,056	213.5
1987										
I	14,1171	892	852	15,915	301	86	66	976	14,487	52.4
II	14,286	976	939	16,200	376	74	48	1,044	14,660	52.9
Year /2	58,439	892	3,515	62,845	1,564	335	237	990	59,719	216.0
1988										
Year /2	59,982	990	3575	64,547	1,327	350	250	976	61,644	222.5

1/ Totals may not add because of rounding. 2/ Forecast.

Table 44--Selected marketings, slaughter, stocks, and trade for meat animals and meat

Item	1986			1987								
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
						1,000 head						
Federally inspected:												
Slaughter												
Cattle	3,164	2,693	2,944	3,084	2,564	2,805	2,875	2,780	2,945	3,009	2,972	2,977
Steers	1,527	1,232	1,339	1,476	1,237	1,365	1,474	1,392	1,482	1,517	1,451	1,381
Heifers	897	757	837	970	794	862	828	825	874	889	932	1,023
Cows	677	649	714	586	484	523	517	505	531	545	532	511
Bulls and stags	63	54	53	53	49	56	57	58	58	58	56	62
Calves	276	239	272	248	225	251	215	189	214	220	202	229
Sheep and lambs	495	401	442	418	391	432	477	363	407	411	400	459
Hogs	7,083	6,064	6,558	6,723	5,886	6,786	6,492	5,916	5,987	6,019	6,019	6,855
Percentage sows	4.2	4.4	5.1	3.9	4.0	3.7	4.0	4.2	5.3	5.6	5.8	4.9
						Pounds						
Average live wt per head												
Cattle	1,108	1,104	1,105	1,114	1,113	1,111	1,097	1,091	1,089	1,096	1,103	1,118
Calves	239	229	228	240	241	232	243	255	251	238	227	237
Sheep and lambs	119	119	122	118	119	122	117	117	116	118	118	120
Hogs	248	250	252	251	248	246	247	247	248	246	244	246
Average dressed wt												
Beef	660	648	648	663	663	663	654	650	650	656	662	670
Veal	146	139	139	145	147	141	146	156	152	146	137	143
Lamb and mutton	60	60	61	60	60	62	59	59	58	59	59	61
Pork	178	180	181	181	177	177	176	177	177	176	175	175
						Million pounds						
Production												
Beef	2,079	1,741	1,900	2,038	1,693	1,851	1,874	1,800	1,908	1,966	1,959	1,988
Veal	39	32	37	35	32	35	31	29	32	31	27	32
Lamb and mutton	30	24	27	25	23	26	28	21	23	24	24	28
Pork	1,254	1,083	1,181	1,211	1,042	1,196	1,141	1,043	1,058	1,055	1,048	1,199
Commercial: 1/						1,000 head						
Slaughter												
Cattle	3,285	2,819	3,076	3,199	2,662	2,904	2,971	2,872	3,035	3,098	3,054	3,070
Calves	295	256	289	263	239	266	228	202	227	232	214	243
Sheep and Lambs	511	413	454	428	400	442	496	373	421	426	416	474
Hogs	7,279	6,255	6,796	6,917	6,055	6,966	6,665	6,078	6,158	6,187	6,176	7,030
						Million pounds						
Production												
Beef	2,146	1,808	1,971	2,102	1,747	1,907	1,928	1,851	1,958	2,017	2,005	2,041
Veal	44	37	41	39	36	38	34	32	35	34	30	36
Lamb and mutton	30	24	28	25	24	27	29	22	24	25	24	28
Pork	1,285	1,117	1,221	1,244	1,070	1,226	1,169	1,070	1,086	1,082	1,074	1,228
Cold storage stocks: 2/												
Beef	292	297	311	321	306	311	312	280	253	279	269	284
Veal	8	7	7	7	7	6	6	5	4	4	4	3
Lamb and mutton	15	14	13	12	14	14	13	13	11	9	8	7
Pork	216	206	197	218	229	221	218	219	189	181	175	185
Total meat	531	524	527	598	599	596	591	559	498	516	495	519
Trade:												
Imports (carcass wt)												
Beef	176.3	184.4	144.4	161.3	187.3	194.3	199.4	189.6	238.1	252.5	215.1	
Veal	3.1	4.7	4.0	3.2	1.5	1.4	1.4	1.4	1.1	1.4	1.2	
Lamb and mutton	2.8	4.0	5.4	3.3	4.3	5.0	4.3	3.9	3.3	2.9	2.3	
Pork	101.0	109.3	103.9	98.6	89.3	101.9	102.7	90.1	103.4	101.7	97.1	
Exports (carcass wt)												
Beef	75.7	49.6	67.7	52.4	35.4	38.6	41.1	48.6	46.0	52.7	50.9	
Veal	.5	.4	.6	.5	.7	.7	.8	.5	.5	.4	.3	
Lamb and mutton	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.2	
Pork	6.4	10.4	10.4	6.7	5.1	7.1	9.2	9.6	8.3	6.8	5.7	

1/ Federally inspected and other commercial. 2/ End of month. Beginning January 1977, excludes beef and pork stocks in cooler.

Table 45--Selected price statistics for meat animals and meat

Item	1986 Oct.	Nov.	Dec.	1987 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
	Dollars per cwt											
Slaughter Steers:												
Omaha												
Choice, 900-1100 lb	59.73	61.54	59.82	58.79	61.02	61.59	66.30	70.66	68.83	65.80	64.50	64.81
Good, 900-1100 lb	54.96	56.23	53.87	52.88	55.23	56.40	59.35	62.62	61.27	58.40	58.21	59.38
California												
Choice, 900-1100 lb	59.70	61.38	60.10	60.19	63.45	64.28	68.35	70.47	69.06	65.80	66.38	66.90
Colorado												
Choice, 900-1100 lb	62.04	63.47	60.58	60.17	63.62	64.80	69.91	71.95	70.01	65.74	65.16	66.41
Texas												
Choice, 900-1100 lb	61.90	63.73	61.45	60.61	64.09	65.26	70.39	71.80	69.96	65.70	65.12	66.46
Slaughter heifers:												
Omaha												
Choice, 900-1100 lb	59.51	61.80	59.72	58.18	60.74	61.58	65.99	70.12	69.42	65.69	64.19	64.31
Good, 700-900 lb	54.81	56.44	54.48	53.83	56.08	56.83	61.48	64.86	63.42	61.12	60.58	61.08
Cows:												
Omaha												
Commercial	37.80	35.78	35.79	40.45	43.07	45.81	44.37	44.05	43.31	45.25	46.97	47.83
Utility	37.32	35.88	35.48	39.79	42.29	45.01	44.23	44.36	44.72	45.64	46.35	47.62
Cutter	35.52	34.32	33.47	37.49	40.24	42.91	42.33	42.85	43.14	44.60	45.30	45.42
Canner	32.48	31.01	29.89	33.28	35.02	37.61	38.00	37.95	38.17	40.36	41.23	41.79
Vealers:												
Choice, So. St. Paul	67.50	67.50	67.50	65.94	68.28	70.00	75.00	90.00	90.63	77.50	79.22	80.25
Feeder steers: 1/												
Kansas City												
Medium No. 1,												
400-500 lb	70.00	68.50	69.40	73.38	76.38	79.38	81.20	83.06	84.33	87.33	88.13	92.40
600-700 lb	65.10	64.13	65.00	69.00	71.38	71.13	72.90	73.38	74.00	76.20	79.38	81.50
All weights and grades	61.94	62.77	62.83	65.75	69.01	68.47	70.56	70.53	70.21	71.22	75.31	77.10
Amarillo												
Medium No. 1,												
600-700 lb	61.65	62.75	63.58	66.47	70.31	70.56	71.48	69.63	71.19	75.18	77.38	80.90
Georgia Auctions												
Medium No. 1,												
600-700 lb	56.40	57.33	57.33	62.38	65.88	66.75	67.20	67.25	69.25	70.13	72.75	75.60
Medium No. 2,												
400-500 lb	59.30	58.33	58.33	62.50	68.38	71.50	70.50	72.63	72.00	75.63	76.75	80.40
Feeder heifers:												
Kansas City												
Medium No. 1,												
400-500 lb	60.70	58.88	59.80	65.13	69.13	71.63	72.80	74.63	74.33	75.25	78.50	82.40
600-700 lb	59.65	58.25	59.20	63.19	65.13	65.75	66.80	67.63	68.25	70.40	75.00	74.00
Slaughter hogs:												
Barrows and gilts												
Omaha No. 1 & 2,												
210-240 lb	55.35	55.04	53.49	49.31	49.71	48.83	51.91	55.81	60.82	62.20	60.62	55.29
All weights	54.67	53.73	51.25	47.33	48.68	48.15	51.55	55.39	60.70	61.72	60.50	54.63
Sioux City	54.86	54.44	52.02	47.56	49.08	48.67	52.10	55.79	61.37	62.69	60.56	55.19
7 markets 2/	54.21	53.62	51.42	47.39	48.73	48.22	51.85	55.58	61.08	61.85	60.35	54.72
Sows:												
7 markets 2/	50.25	48.03	42.91	43.94	42.38	42.82	46.42	46.26	46.35	48.09	49.76	49.72
Feeder pigs:												
No. 1 & 2, So. Mo.,												
40-50 lb (per hd.)	53.23	50.00	47.69	47.00	53.96	54.98	56.00	51.66	45.89	45.60	48.05	47.28
Slaughter lambs:												
Choice, San Angelo	59.65	65.42	73.33	78.56	75.75	86.50	93.12	94.50	84.83	76.83	71.83	70.05
Choice, So. St. Paul	55.72	66.71	72.50	76.55	75.80	80.60	81.88	87.73	80.45	72.34	71.65	66.86
Ewes, Good,												
San Angelo	36.85	37.58	38.00	39.81	41.25	42.50	39.05	36.25	34.62	36.62	38.67	39.81
So. St. Paul	20.50	20.50	20.50	20.50	20.50	20.50	20.50	20.50	19.85	19.50	19.95	21.10
Feeder lambs:												
Choice, San Angelo	81.45	83.50	89.92	95.88	99.50	108.50	109.40	112.62	94.56	98.75	96.75	102.55
Choice, So. St. Paul	66.32	72.80	79.18	85.98	86.93	87.50	87.58	92.10	90.40	84.49	85.00	88.00

Continued--

Table 45--Selected price statistics for meat animals and meat--Continued

Item	1986 Oct.	Nov.	Dec.	1987 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
						Dollars per cwt						
Farm prices:												
Beef cattle	54.40	54.60	53.20	56.40	58.80	59.30	62.60	63.00	62.50	61.10	61.90	63.70
Calves	62.70	62.20	62.20	66.40	70.60	72.50	75.10	77.30	78.80	80.30	82.30	85.90
Hogs	53.10	52.80	50.60	47.20	48.20	47.40	50.80	54.40	60.30	59.60	58.60	54.30
Sheep	25.50	26.10	29.30	31.50	32.20	30.70	28.60	28.30	25.70	28.50	32.00	32.50
Lambs	62.50	69.30	73.20	76.60	76.00	80.80	86.10	90.10	83.50	78.70	76.10	76.80
Meat prices:												
Wholesale												
Central U.S. markets												
Steer beef, Choice, 600-700 lb	91.80	95.70	92.04	89.70	91.69	92.86	100.56	107.80	105.71	99.29	95.45	96.87
Heifer beef, Choice 500-600 lb	90.78	94.63	90.25	87.83	90.38	91.85	99.88	107.55	104.73	98.18	94.04	96.15
Cow beef, Canner and Cutter	71.44	68.92	69.58	77.92	80.89	84.58	82.19	82.05	84.15	84.51	85.63	86.82
Pork loins, 14-17 lb 4/	109.81	100.13	102.30	98.29	99.40	93.25	102.21	120.77	124.38	121.73	123.50	122.66
Pork bellies, 12-14 lb	60.32	63.30	64.72	66.32	57.81	60.02	65.79	67.21	78.44	83.62	80.46	59.74
Hams, skinned, 14-17 lb	105.20	109.40	87.43	65.75	65.43	71.97	72.66	70.98	78.91	79.93	86.15	93.58
East Coast:												
Lamb, Choice and Prime, 35-45 lb	127.50	144.06	156.00	160.21	158.96	168.75	177.60	179.00	165.00	152.00	146.25	144.50
55-65 lb	117.50	136.25	146.00	153.96	151.46	161.25	167.40	173.00	162.00	148.25	141.00	137.60
West Coast:												
Steer beef, Choice, 600-700 lb	95.00	96.69	102.30	93.38	97.38	98.75	104.90	108.75	109.44	106.00	nq	103.00
						Cents per lb						
Retail												
Beef, Choice	231.2	233.8	234.8	236.6	233.6	233.6	236.8	243.4	249.4	248.2	245.4	245.5
Pork	194.9	192.5	191.3	188.1	185.6	181.3	178.9	183.7	187.6	193.6	196.2	196.9
						1967=100						
Price indexes: (BLS)												
Retail meats	283.9	285.4	286.3	288.6	285.3	286.4	286.9	291.8	297.1	299.8	301.0	300.7
Beef and veal	273.8	277.6	279.5	282.7	280.7	282.7	285.8	292.6	297.6	297.7	296.2	295.1
Pork	298.0	295.6	294.2	294.0	289.8	287.2	284.4	289.4	297.7	305.8	308.3	309.4
Other meats	283.5	285.2	286.9	290.3	285.5	290.2	289.2	289.0	290.3	291.5	297.5	296.9
Poultry	247.8	245.2	241.9	238.4	237.0	234.1	231.1	230.5	228.3	226.1	230.0	229.1
Livestock-feed ratios, Omaha: 3/												
Beef steer-corn	42.5	40.3	38.9	40.5	44.0	41.6	42.3	40.1	38.8	41.0	44.0	42.8
Hog-corn	39.0	34.7	33.4	32.7	35.1	32.6	32.7	31.6	34.3	38.4	41.3	36.3

1/ Reflects new feeder cattle grades. 2/ St. Louis N.S.Y., Kansas City, Omaha, Sioux City, So. St. Joseph, So. St. Paul, and Indianapolis. 3/ Bushels of No. 2 yellow corn equivalent in value to 100 pounds live weight.

IRRADIATION OF PORK: A NEW MARKETING TOOL?

By

Rosanna Mentzer Morrison and Tanya Roberts*

Abstract: Irradiation has been approved for trichinae control in pork. The costs of irradiation are estimated to range from 0.2 to 0.7 cents per pound depending upon the volume treated. Public health benefits from reducing trichinosis and toxoplasmosis are estimated to exceed costs by $100 to $200 million annually. However, use depends on consumer acceptance and pork industry concern over these diseases, as well as the cost and effectiveness of other control options. Irradiation may also permit shelf life extension of unprocessed pork and reduction of salt and/or nitrite in processed products.

Keywords: Pork, irradiation, marketing, trichinosis, toxoplasmosis, costs, economies of size.

The introduction of America's Cut--a premium boneless pork cut--demonstrates the pork industry's continued interest in developing new products and marketing tools. Irradiation may allow pork producers to offer other premium qualities, such as safety from trichinosis and other diseases and longer shelf life. Whether irradiation will be used depends on approval by the proper regulatory authorities, its cost with respect to benefits and alternative treatments, and acceptance by processors, retailers, and consumers.

Irradiation Offers Safer Pork and Longer Shelf Life

Irradiation is exposure of products to ionizing energy (radiation) in order to achieve a variety of effects. The process does not raise the product's temperature significantly, leaving food closer to its unprocessed state than does canning. Irradiation sterilizes or kills microbial or insect pests by damaging their genetic material. The energy level of the radiation, used in accordance with U.S. Food and Drug Administration (FDA) restrictions, will not make food radioactive. Radiation's effects depend on the dose absorbed, usually measured in kilorads (krads).

Parasite control can often be achieved with relatively low doses of 30 to 100 krads. For example, a 15-krad dose will sterilize the *Trichinella spiralis* parasite that causes trichinosis. The sterilized parasite will not be able to reproduce and invade the host's muscles, where it can cause a wide variety of ailments. The National Pork Producers Council believes that by removing the reason for overcooking, trichinae-safe pork will also permit juicier fresh pork dishes, lower the cost of processed products, and allow greater retention of important nutrients.

In July 1985, FDA approved treatment of pork carcasses and fresh cuts of pork at doses between 30 and 100 krads to sterilize the *Trichinella spiralis* organism and prevent trichinosis in humans eating infected pork. Five months later, USDA's Food Safety and Inspection Service (FSIS) amended the Federal meat inspection regulations to allow irradiation of pork carcasses or fresh or previously frozen cuts of pork not cured or heat-processed. FSIS approved the same minimum and maximum doses as the FDA. FSIS does not recognize irradiation as a substitute for traditional trichinae destruction procedures. Irradiated pork may not be used in pork sausages and luncheon meats, hams, bacon, etc., unless subsequently frozen, cooked, or cured.

Irradiation may also be able to extend the shelf life of pork and other meats, reduce their potential for causing illness, and lead to new products. Neither the FDA nor FSIS has approved these uses. Ricardo Molins at Iowa State University has irradiated ground pork, one of the most perishable pork products. A

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100-krad dose extended the refrigerated shelf life of vacuum-packed ground pork from 6 to 9 days (2) 1/. Other pork cuts can be expected to respond similarly.

Molins found lactic acid bacteria (known to inhibit botulism) to be resistent to irradiation of 100 krads, indicating that irradiation of vacuum-packed ground pork at that dose is unlikely to increase the risk of botulism. The botulism danger with vacuum-packed meats is one of the concerns of FSIS. Molins is examining the reduction of *Salmonella, Yersinia,* and other disease-causing bacteria at doses of 250 to 300 krads. He is also investigating whether these higher doses create off-flavors in the meat.

Scientists at USDA's Eastern Regional Research Center (ERRC) are examining irradiation's effects on nutrients. At temperatures above freezing, some thiamine reduction occurs. At low irradiation doses the reduction is minor.

ERRC researchers are also investigating whether irradiation can replace salt and/or nitrite used to prevent botulism in processed meats. This substitution would allow low-additive meats on the market. A variety of doses and products are being tested, including bacon irradiated at 750 to 3,000 krads and turkey franks irradiated at 500 to 1,000 krads. Off-flavors will be a problem at these higher doses unless the meats are frozen when irradiated.

Implications for Marketing

The marketing of trichinae-safe pork could expand demand, increase product differentiation and branding, and lead to the development of new products.

Because of the risk of illness, consumers may be eating less pork or overcooking it. Pork purchases may rise if irradiation allays safety concerns or permits a less-cooked, juicer product. Pork is more likely to be eaten at home than other meats. Only 10 percent of pork was eaten away from home, whereas 17 percent of poultry, 18 percent of beef, and 25 percent of fish/shellfish were eaten away from home in 1977-78 (10). Restaurants and fast food outlets may view irradiation as a way to permit additional and more tasty pork dishes.

Irradiation could be a way for firms to differentiate their products through promoting their food safety benefits. The market for safer foods at a reasonable price may be expanding, due to greater health consciousness. Furthermore, more people are at high risk from foodborne diseases. This group includes people with organ transplants, on cancer chemotherapy, or infected with the AIDS virus. While processors may be interested in putting a "trichinae-safe" label on their pork, they realize the label could scare off other consumers unaware of the previous risk.

If consumers come to prefer "nitrite-reduced" bacon or "trichinae-safe" pork, irradiation might provide a competitive edge to adopting firms. Such firms could capture a larger market share or command a premium price for their irradiation-treated products. Over the long run, if irradiation is accepted, branding of fresh pork may increase as companies seek to identify irradiation's benefits with their brand names.

But will consumers pay more for a "safer" product? Research by economist Carol Kramer on demand for safe foods found an expressed willingness to pay 1 to 3 cents per pound more for hormone- and drug-free beef (4). Whether consumers would put the same value on trichinae-safe pork is unknown.

Trichinae-safe pork products will enhance the development of new pork products, particularly products able to be easily prepared in a microwave oven. Pork processors have already begun to offer pre-cooked products that can be safely heated in a microwave oven, but irradiation may widen their options. Irradiation must be cheaper or more desirable for firms to abandon their current practices.

Longer shelf life for retail cuts of fresh pork could accelerate the trend of final cutting and packaging being done by the packing plant rather than the retail store. Also, products may be irradiated in consumer-ready packages to prevent recontamination. Restaurants may find extra

1/ Numbers in parentheses refer to references at the end of article.

shelf life a real bonus in avoiding waste due to spoilage, reducing frequency of purchases, and expanding their menu items.

Irradiation Treatment Costs

To determine irradiation's economic feasibility, cost must be determined and compared with the value of benefits and the cost of substitute processes. Policymakers and prospective users are interested in whether treatment costs per unit of output fall as plant size increases, a concept known as economies of size. If the economies of size are substantial, operators of small pork irradiators would be at a distinct cost disadvantage when faced with direct competition from large irradiators.

Since irradiators treating foods generally operate on a research scale, information from commercial irradiators sterilizing medical supplies was adapted to estimate capital and operating costs for different sized pork irradiators. The actual cost of irradiating a specific food will depend on the required dose, the food's tolerance for radiation, the irradiator's design, construction costs, wage levels, financing arrangements, and other variables.

Table 1 shows investment and treatment costs for hypothetical pork irradiation facilities. The sizes analyzed reflect volumes handled by medium and large U.S. hog slaughtering plants. Costs are based on the irradiators being physically integrated into the plant. Under this arrangement, the irradiator would use the existing plant's refrigerated storage and loading dock areas and share some of the supervisory, clerical, and maintenance costs with the processing operations. Split pork carcasses were assumed to move through the irradiator suspended from a monorail track and to receive a dose of 100 krads for disease control. Other assumptions, including input prices and how capital costs were treated, are described in (5). Irradiation costs do not include the expense of educational campaigns, research and development, inspector training, radioactive waste disposal, and other potential costs incurred by the food firm or various government bodies. The estimates also exclude any unforeseen adverse health effects of consuming irradiated foods.

Table 1. Investment and Unit Costs for Selected Cobalt-60 Irradiators Treating Pork for Trichinosis and Toxoplasmosis Control

Annual volume	Initial investment	Irradiation unit costs
Million pounds	Million dollars	Cents per pound pound
66.5	.9	0.7
133	1.1	0.4
266	1.6	0.3
532	2.5	0.2

Costs in this table are based on a specific set of assumption and input prices listed in (5). Investment items include: cobalt-60, biological shielding and other building space, irradiator machinery and auxiliary systems, product-handling equipment, design and engineering, and working capital. Treatment costs are for irradiators processing the hourly volumes for which they were designed and operating three shifts a day, five days per week.

Treatment costs for disease control in pork ranged from 0.7 cents per pound for an irradiator handling 66.5 million pounds a year to 0.2 cents per pound for the 532-million pound plant. Average treatment costs dropped as irradiator size increased, but the potential unit cost reductions were not pronounced. Earlier ERS cost analyses for other commodities and smaller volumes found that economies of size become less significant for irradiators treating more than 50 million pounds a year. Since over 85 percent of U.S. pork is slaughtered in plants handling 64 million pounds or more annually, the industry's structure is compatible with irradiation and the process would have little effect on industry concentration.

The ERS estimates are based on the pork slaughtering plant operating an in-house irradiator. Another option would be for a pork processor to contract with an irradiation company to irradiate the food for a fee. Small plants that do not have the volume to justify an in-house irradiator could also use a contract irradiator. The pork firm would not have to incur the costs of building and operating an irradiator, but would be subjected to the expense of transporting the product. In 1987, there were 28 contract irradiation facilities in the United States (6). Representatives from these companies estimate that fees for treating red meats and poultry would range from 1 to 7 cents per

pound depending on the volume treated and other terms of the contract, costs higher than the ERS estimates for "in- house" facilities. The additional handling and transportation costs make the disparity of cost estimates larger.

Quantification of Public Health Benefits

Two human diseases associated with pork and avoidable with irradiation treatment are trichinosis and toxoplasmosis (5 and 9). However, regulators have not ruled on the use of irradiation to prevent toxoplasmosis. Curing, cooking, and freezing can reduce or eliminate these parasites, but these procedures alter product characteristics. In contrast, irradiation at 100 krads causes minimal organoleptic changes.

Human cases of trichinosis have declined dramatically in the United States. Although most cases are unreported, studies suggest pork causes about 560 cases a year. Researchers at the Centers for Disease Control (CDC) investigated medical costs and lost wages associated with trichinosis (7). Updating their figures to 1985 prices and multiplying them by the estimated 560 annual cases result in costs of $1.4 million per year for pork-related cases of trichinosis. The one to three deaths a year add another $0.1 to $1.4 million, depending upon the measure used to assign an economic value to human life. Total economic loss due to pork-caused trichinosis in the United States is estimated between $1.5 to $2.8 million annually.

Toxoplasmosis can arise from eating undercooked pork, handling raw pork, or cross-contamination of other foods in the kitchen. Public health researchers suggest that pork causes half to three-quarters of the thousands of U.S. cases annually. Toxoplasmosis can take a variety of forms, from mild to life-threatening. Healthy adults with normal immune systems typically fight off the disease with no symptoms. However, fetuses do not have well-developed immune systems. If a pregnant women becomes infected, there is a 20- to 40-percent probability that her child will be infected. Surviving babies are likely to suffer eye damage or mental retardation.

An estimated 3,300 babies born in the United States every year are infected with toxoplasmosis. Two Stanford University researchers estimate the lifetime medical, special schooling, and foster care costs for children surviving toxoplasmosis at $430 million in 1985 prices (11). If pork causes half to three-quarters of these cases (1,650 to 2,475 cases of congenital toxoplasmosis), then the loss attributed to pork is $215 to $323 million annually. Thus, toxoplasmosis is economically a more significant disease than trichinosis. This reflects two events: the reduction in trichinosis through changes in industry and consumer practices and the new recognition of toxoplasmosis as a disease transmitted through food.

When the cost of irradiating all pork handled in medium and large U.S. plants is contrasted with the avoided medical and lost productivity costs associated with trichinosis and toxoplasmosis, public health benefits, conservatively estimated, were found to exceed costs by about $100 million to $200 million. Table 2 shows that 99 percent of the public health benefits result from reducing toxoplasmosis. Based on our public health estimates, irradiation of pork solely for trichinae control is not cost-effective. However, other marketing benefits from trichinae-safe pork may be gained. Trichinae-safe pork may ease consumers' minds and reduce overcooking, leading to greater pork consumption.

A benefit/cost comparison is not complete without exploring other control options. Irradiation is only one possible method of reducing human foodborne illness. Continuing their good management practices, farmers can break the trichinae recontamination cycle by keeping rats out of hog pens, by reducing hog cannibalism, and by cooking garbage thoroughly before feeding to hogs. Also, new testing methods may provide

Table 2. Comparison of Annual Benefits vs. Costs of Irradiation

Disease	Public health benefits	Irradiation costs	Ratio of benefits to costs	Net benefits
	million $	million $		million $
Trichinosis	1.3 to 2.4	80	.0016 to 0.3	-78.7 to -77.6
Toxoplasmosis	185 to 278	80	2.3 to 3.5	105 to 198
Both	186 to 280	80	2.3 to 3.5	106 to 200

Based on analyses in (5). Assuming 86 percent of U.S. pork is irradiated for 0.7 cents per pound at 100 krads, which is sufficient to prevent human trichinosis and toxoplasmosis.

a way to identify problem animals and problem farms. Lundy Packing Company in Clinton, North Carolina is test marketing trichinae-tested pork using the pooled tissue digestion technique (3). Pork tissue is dissolved and examined under a microscope for the presence of trichinae. A faster, less labor intensive blood test for trichinae, the ELISA test, is in the final stages of Government approval. Toxoplasmosis control options have not been thoroughly investigated, but possibilities range from reducing the risk of exposure to pregnant women to vaccinating cats (the reservoir for the parasite) on hog farms.

Retailer and Consumer Acceptance

The commercial success or failure of irradiated meats will rest on acceptance by retailers and consumers. Retailers' decisions on whether to offer irradiated pork will depend on their beliefs about how consumers will react to irradiated food. FSIS has jurisdiction over retail labels for red meats and poultry. FSIS has decided that retail packages of irradiated pork and products containing irradiated pork must bear both the statement "Treated with radiation" or "Treated by irradiation" and the international radiation logo shown in the figure (FSIS Notice 26-28, April 16, 1986). Fresh irradiated pork and non-shelf-stable products containing irradiated pork must also carry an appropriate handling statement, such as "keep refrigerated" or "keep frozen."

The only irradiated foods in the U.S. marketplace today are a small amount of spices used in processed foods. Two limited test marketings of irradiated mangoes and papayas were conducted in supermarkets in Miami and Los Angeles last year. Shoppers were generally favorable toward the irradiated fruit. In the Los Angeles stores, irradiated papayas outsold hot water treated papayas (1). Whether irradiated pork sold under commercial conditions would have similar success is unknown, especially given the possibility of organized boycotts by opponents of irradiation.

In summary, irradiation promises several benefits such as foodborne disease reduction and shelf-life extension. Industry's decision to market irradiated pork partly depends on whether processors perceive a consumer demand for these benefits and a willingness to buy irradiated meats. A Government decision to impose stricter food safety standards for pathogens would also encourage the industry to adopt irradiation. Trichinae- safe pork may allow more variety in pork preparation. Shelf-life extension is likely to be valued more by restaurants than either cooks at home or fast food outlets, where food spoilage is minimal because of the few menu choices and high volume.

However, irradiation is not the only way to achieve these benefits. For example, special oxygen- free packaging for fresh meat can extend shelf life by three times the normal rate (8). Also, the tissue digestion and ELISA testing methods may be perfected in the near future and be cheaper and more readily accepted than irradiation.

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